THE BRITISH JOURNAL

OF

OPHTHALMOLOGY

JUNE, 1932

COMMUNICATIONS

THE CLINICAL SIGNIFICANCE OF THE OCULAR MUSCULATURE

With special reference to the intra-ocular pressure and the circulation of the intra-ocular fluid

BY

W. S. DUKE-ELDER AND P. M. DUKE-ELDER

FROM THE DEPARTMENT OF PHYSIOLOGY AND BIOCHEMISTRY, UNIVERSITY COLLEGE, LONDON

IN the course of experimental investigations which we have been pursuing for some time, there has come to light a series of facts relating to the influence of the ocular musculature upon the physiology of the eye, which it may be of value to correlate, inasmuch as they have some clinical value. The observations refer to two main subjects: the circulation of the intra-ocular fluid, and the maintenance and variation of the intra-ocular pressure. With regard to the first, it has been suggested by one of us that the intra-ocular fluid is a dialysate of the capillary blood maintained in circulation by changes in pressure continually occurring in the eye: we would suggest that the evidence presented in this paper goes a considerable way to substantiate this theory. With regard to the second question, we do not think that sufficient attention has hitherto been devoted in the literature to the effect of the activity of the extra- and intra-ocular musculature upon the pressure of the eye. We shall also allude to some matters of clinical importance which follow directly from these questions, such as the action of

miotics and mydriatics, the diurnal pressure curve in glaucoma, the necessity for adequate akinesia in intra-ocular operations, and so on.

The Extra-ocular Muscles

We shall first consider the effect of the extra-ocular muscles upon the intra-ocular pressure. We shall deal with them seriatim: the muscles of the lids, the voluntary muscles of the eyeball, and the involuntary orbital muscle of Müller.

1. *The Lid Muscles.*—In these experiments dogs were employed, anaesthetized with ether-chloralose, and the intra-ocular pressure was recorded by the optical manometer described in a recent paper (1931).

Closure of the lids involves two completely distinct actions, an involuntary light pressure such as occurs in the action of blinking and involves the activity of the palpebral portion of the orbicularis alone, and a voluntary forced closure which involves a contraction of the orbital portion of this muscle in addition. The effect of the first of these actions upon the tension of the eye was studied in the dog by touching the cornea lightly with a hair in order to elicit the corneal reflex. Fig. 1 shows that even this light closure raises the intra-ocular pressure by 5 mm. Hg. The effect of the second action was studied by stimulating the facial nerve electrically after its exit from the stylo-mastoid foramen; this throws the whole of the orbicularis into contraction, and the subsequent rise of 26 mm. Hg in the pressure of the eye is seen in Fig. 2.

2. *The Muscles of the Globe.*—It is already well known that a contraction of the recti and obliques raises the intra-ocular pressure

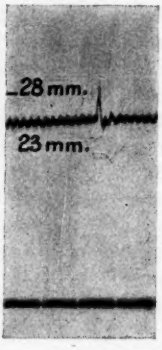


FIG. 1.

The effect of blinking on the intra-ocular pressure. The blink was excited by touching the cornea of a lightly anaesthetized dog with a hair.

by compressing the globe: thus tonometric observations have shown that the tension of the eye rises on convergence. It is not generally recognized, however, that the normal tone of these muscles is responsible for the maintenance of almost one-half of

FIG. 2.

The effect of forcible closure of the lids on the intra-ocular pressure. The closure was excited by stimulating the facial nerve of a dog.

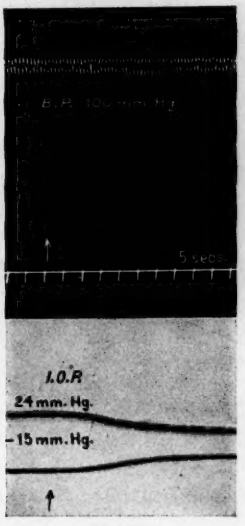


FIG. 3.

The effect of paralysis of the recti muscles on the intra-ocular pressure. 2 c.c. of 2 per cent. curare injected into the circulation of the perfused dog. The upper curve is the blood pressure, the lower the intra-ocular pressure. The displacement of the base line of the latter indicates a movement of the eye of exophthalmos owing to the muscular relaxation.

the normal intra-ocular pressure, a fact which is readily shown by the effects of curare. When this drug is administered a profound fall of intra-ocular pressure results which is due to a considerable extent to the coincident fall in blood pressure. If, however, an injection of curare is given while the blood pressure is maintained at a constant level by the technique of the perfused eye (Duke-Elder, 1931) the effects of the muscular relaxation can be observed uncomplicated by the influence of the general circulation. Fig. 3

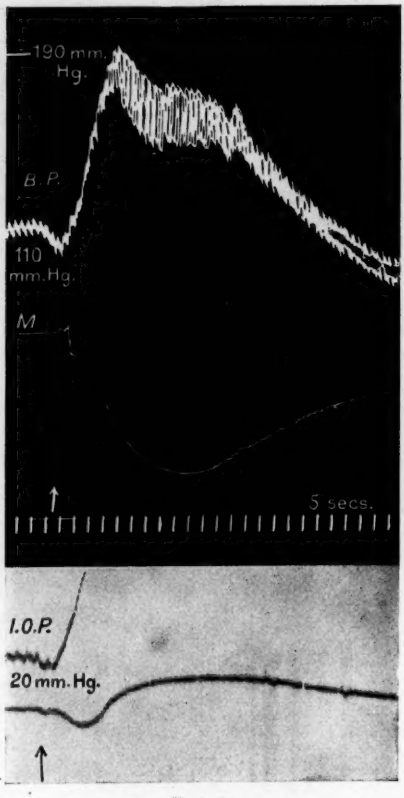


FIG. 4.

The effect of a contraction of the extra-ocular muscles on the intra-ocular pressure. 1 c.c. 1 in 20 choline chloride injected intra-venously into a dog. The upper curve is the blood pressure (B.P.), the middle curve a tracing of the superior rectus muscle (M), and the lower curve the intra-ocular pressure. The movement of the base line of the latter denotes a movement of the eye of enophthal-mos, due to muscular contraction.

shows the result obtained in these conditions, which makes it clear that the pressure of the eye falls to almost half its original level.

A contraction of these muscles has the opposite effect. In a previous publication (Duke-Elder, 1930) it has been shown that choline or acetyl-choline when injected into the blood stream produces a contraction of all the recti. Fig. 4 shows the reaction to an intravenous injection of choline in the intact dog, when, of course, the

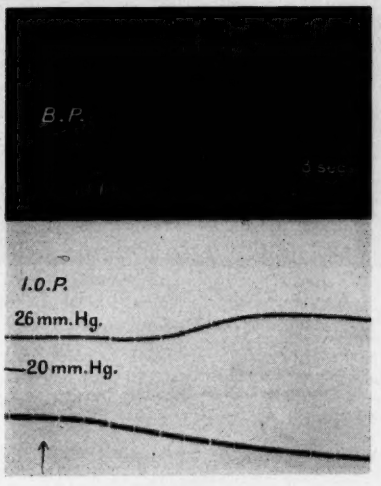


FIG. 5.

The effect of the injection of choline upon the perfused dog. 1 c.c. of 1 in 20 choline chloride injected into the circulation. The upper curve is the blood pressure (B.P.), the lower the intra-ocular pressure (I.O.P.) The movement of the base line of the latter denotes an enophthalmos.

rise of intra-ocular pressure is partly due to a coincident rise in blood pressure: while Fig. 5 shows the effect of the muscles alone in the perfused animal. In this connection the effect of eserine used in large doses is interesting. Fig. 6 shows the effect of an intravenous injection of 2 c.c. of a 1·0 per cent. solution of this drug in the perfused animal, and it illustrates the marked influence which results from the increase in the tone of the muscles as well as the effects of their fibrillary contraction.

3. *The Muscle of Müller.*—Contraction of the muscle of Müller by stimulation of the sympathetic cannot be studied uncomplicated by coincident vascular effects, since the vaso-motor nerves to the eye are contained in the same trunk; but if an animal is exsanguinated by opening the carotid, and then the sympathetic immediately stimulated, a rise of pressure is obtained which is due only to the

action of this muscle (Fig. 7). The reverse effect of a lowering of the intra-ocular pressure on a decrease in the tone of the plain muscle is seen after the administration of atropine (Fig. 8). The

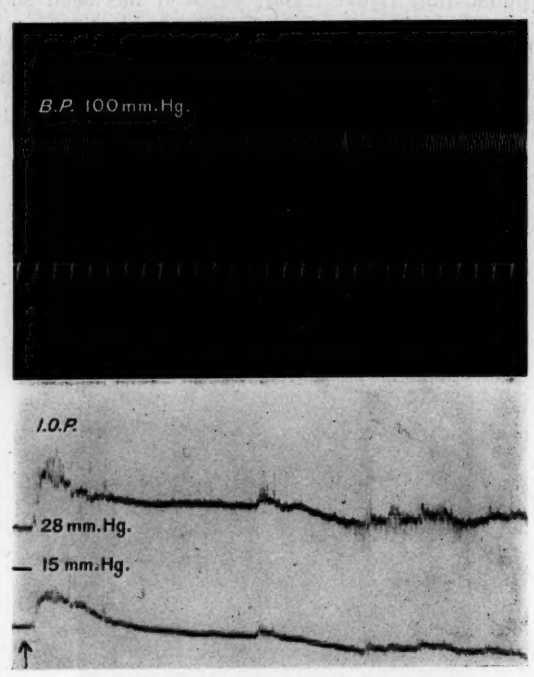


FIG. 6.

The effect of large doses of eserine on the intra-ocular pressure in the perfused dog. With the injection of doses of the sizes of 2 c.c. of a 1 per cent. solution the muscular effect predominates. The sharp kink in the base line denotes an enophthalmos.

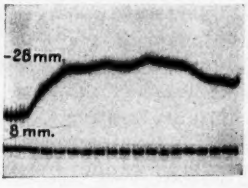


FIG. 7.

The effect of contraction of the plain muscle of the orbit on the intra-ocular pressure of the dog. Müller's muscle was made to contract by stimulating the cervical sympathetic in the newly exsanguinated animal.

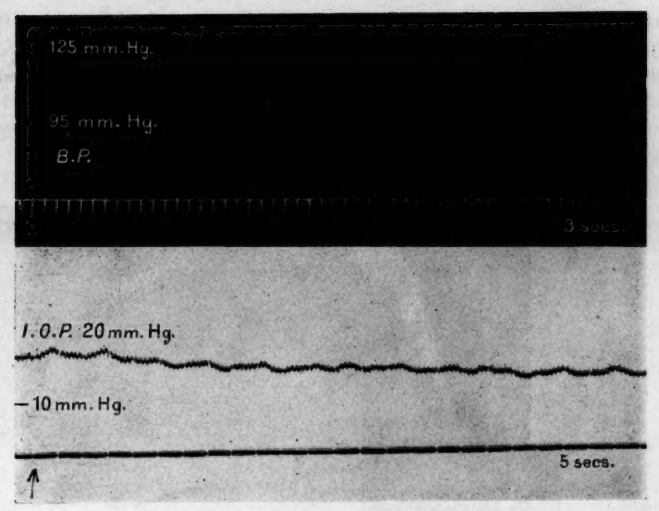


FIG. 8.

The effect of atropine on the intra-ocular pressure of the intact dog. 0·4 c.c. 1 per cent. atropine injected intra-venously. The fall in the intra-ocular pressure is produced by a relaxation of the tone of the plain muscle of the orbit.

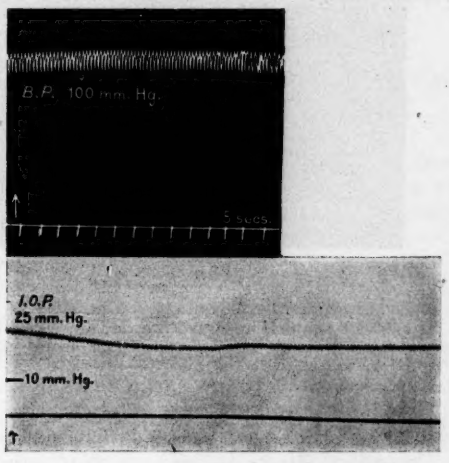


FIG. 9.

The effect of atropine (0·3 c.c. of a 1 per cent. solution) on the intra-ocular pressure of the perfused dog. The initial fall is due to relaxation of the tone of the orbital muscle; the subsequent small rise is due to a capillary dilatation caused by the atropine.

muscular effect here is complicated, for a coincident capillary dilatation due to the action of atropine on the blood vessels of the eye (Duke-Elder, 1931) produces a rise in intra-ocular pressure.

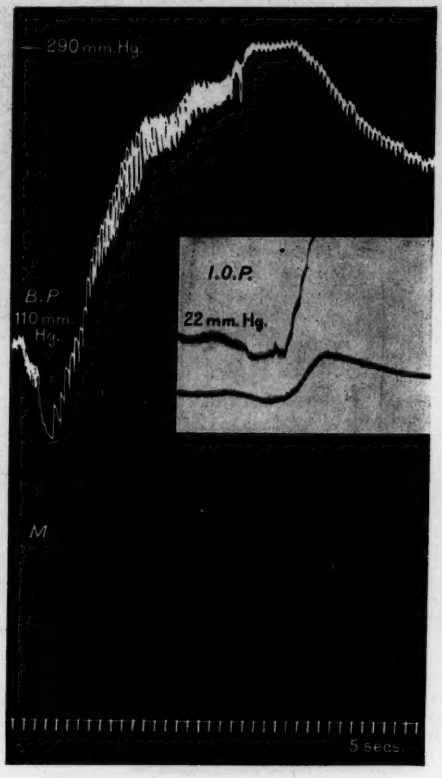


FIG. 10.

The effect of nicotine on the intra-ocular pressure of the intact dog. 1 c.c. of 1 per cent. nicotine injected intra-venously. The upper curve (B.P.) is the blood pressure; the lower curve (M) a tracing of the superior rectus, and the inset (I.O.P.) the intra-ocular pressure.

This rise comes on somewhat later than the fall due to muscular relaxation and the two effects can be readily analysed in the more efficiently controlled circumstances of artificial perfusion (Fig. 9).

Finally, the action of nicotine is interesting. The immediate effect of the action of this drug is to stimulate both the voluntary

and involuntary muscles of the orbit (Duke-Elder, 1931). Fig. 10 shows the very acute rise of intra-ocular pressure which follows its intravenous injection in the normal dog, a rise which is due partly to the contraction of the plain muscle (seen in the long and slow downward variation of the muscle tracing) and partly to the

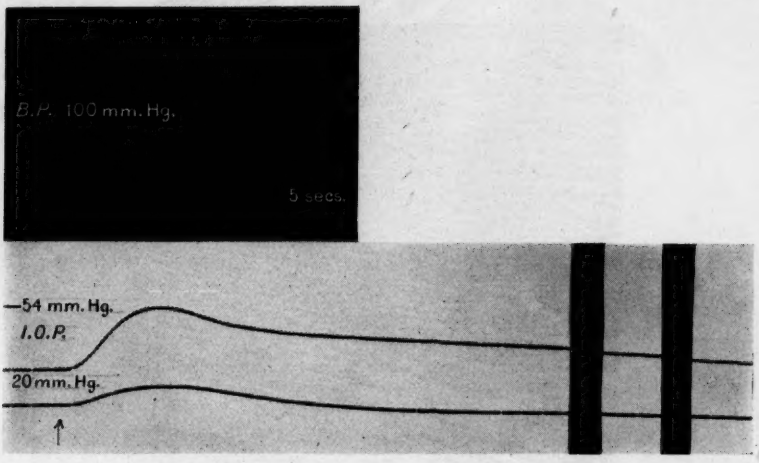


FIG. 11.

The effect of 1 c.c. 1 per cent. nicotine on the perfused dog. The total effect is due to the contraction of the recti muscles.

coincident rise of blood pressure which follows the general sympathetic stimulation. Fig. 11 shows the extent of rise which is due to the action of the muscles alone when the blood pressure is kept constant in the perfused animal.

The Intra-ocular Muscles

The fact that the ciliary muscle on contraction pulls on the scleral spur and thereby opens out the canal of Schlemm and the trabeculae of the angle of the anterior chamber, is already well known. I have recently had the good fortune to receive from Dr. Fortin, of Buenos Aires, a series of microphotographs which show this action more clearly than I have seen elsewhere. Fig. 12 shows the arrangement of the structures at the angle of the anterior chamber in an eye enucleated one hour after death and rapidly

fixed; and Fig. 13 is taken from a section of an eye which was under the action of eserine at the time of death. The pull of the ciliary muscle on the scleral spur and the widening of the spaces between the trabeculae is very obvious. Fig. 14 forms an interesting comparison: it is taken from a glaucomatous eye, and demonstrates how the apposition of the iris to the cornea and the general

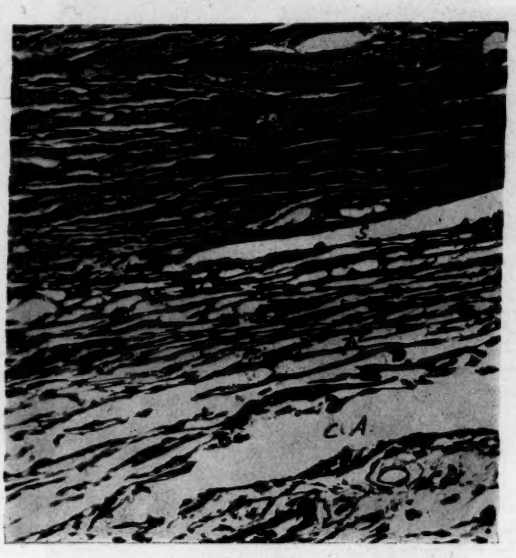


FIG. 12.

The normal angle of the anterior chamber in a rapidly fixed eye (Fortin). S. Canal of Schlemm. C.A. Anterior chamber.

configuration of the entire region of the drainage angles makes free filtration impossible.

A further point, too, emerged from Dr. Fortin's beautiful histological researches. It appears that the ciliary arteries as they run forwards traverse the substance of the ciliary muscle, the fibres of which encircle them as a sphincter: one such arterial branch is demonstrated in Fig. 15. It follows that the arteries supplying the anterior part of the eye are compressed on contraction of this muscle, so that the blood flow will be lessened. At the same time the traction of the fibres on the choroid will tend to open out the veins of this tissue so that, in addition to diminishing the arterial supply, the venous return is aided in the same way as the exit of fluid is assisted through the canal of Schlemm.

FIG. 13.

The angle of the anterior chamber in an eye under the influence of eserine (Fortin).

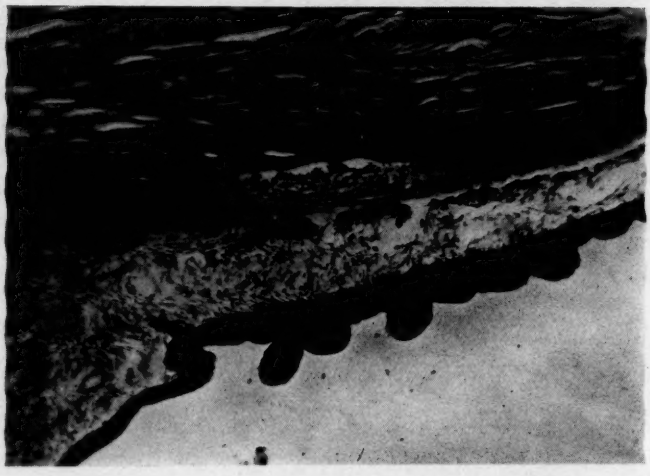


FIG. 14.

The angle of the anterior chamber in a glaucomatous eye (Fortin).
S. Canal of Schlemm. A. Angle of anterior chamber.

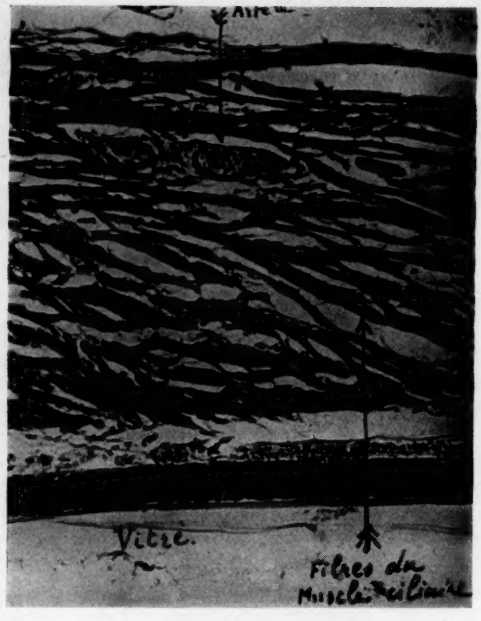


FIG. 15.

Micro-photograph of the ciliary muscle.

The Pressure Circulation of the Intra-ocular Fluid

The hydrostatics of the drainage of the intra-ocular fluids can be deduced from a study of the venous pressure of the eye (Duke-Elder, 1926), the mechanism of which is made clear from Fig. 16. When the intra-ocular pressure is at its normal level (say 20 mm. Hg, Fig. 16A) the pressure in the veins inside the eye is 2 mm. Hg above this (22 mm. Hg), and that in the veins traversing the sclera is about 1 mm. Hg above (21 mm. Hg). The canal of Schlemm is a direct off-shoot of the intra-scleral veins and its contents also will be at the same pressure. When, however, the intra-ocular pressure is raised above its normal level (say to 23 mm. Hg) (B, Fig. 16), the chamber pressure of the eye constricts the exit veins and the circulation proceeds when the pressure in the veins just about to enter

FIG. 16

the sclera is a fraction above this level (23 + mm. Hg). Lying further down the venous stream, the pressure in the intra-scleral veins (and in the canal of Schlemm) is found to be about 1 mm. Hg below the intra-ocular pressure, so that fluid can drain through the trabeculae of the angle of the anterior chamber directly into it. We have seen in a previous publication (Duke-Elder, 1931) that every pulse beat and respiratory excursion raises the intra-ocular pressure to a sufficient height to establish such a pressure circulation. It is true that in the human subject the action of the plain orbital muscle can almost be discounted; but when we remember that all through the waking hours there is a regular rhythm of blinking movements occurring every few seconds as well as constant activity of the recti and obliques, it would seem that there is ample cause for the establishment of an efficient pressure circulation. To this, of course, must be added the activity of the ciliary muscle, which, by opening up the trabeculae of the angle of the iris, makes drainage easier, by widening the canal of Schlemm aids the hydrostatic out-flow by suction, by compressing the ciliary arteries lowers the blood pressure, and by opening up the choroidal veins creates a low pressure in them, again aiding the absorption and elimination of fluid.

A word with regard to the action of mydriatics and miotics. Apart from their already well-recognized action in mechanically blocking and freeing the angle of the anterior chamber, atropine, by releasing all pressure on the arteries supplying the anterior uvea, tract and allowing the veins of the anterior part of the choroid to collapse, will tend to produce a condition of circulatory stasis and hyperaemia; eserine, on the other hand, by constricting the arteries and opening up the veins, will restrict the inflow and aid the outflow of blood, as well as accelerating the outflow of fluid through the drainage angle. The former will thus tend to raise the intra-ocular pressure, the latter to lower it.

The *diurnal pressure curve* in the normal eye is already a well-known physiological phenomenon. The pressure varies throughout the day by some 2 to 3 mm. Hg as is seen in Fig. 17; it is highest

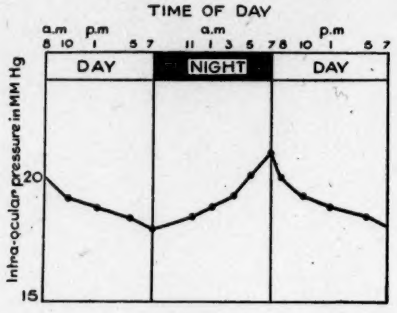


FIG. 17.

The diurnal variation of the intra-ocular pressure of a normal adult man, taken tonometrically.

in the early morning before the subject commences the day's activities; after getting up it falls, at first rapidly and then more slowly, until the evening when the subject retires to rest. Through the night in bed the reverse phenomenon occurs: a rise occurs, again in two stages—a slow and gradual rise during the first few hours, and then a more rapid rise in the early morning. This is almost certainly due to the influence of the pressure-circulation: the absence of muscular activity during the night allows the pressure to rise, and the commencement of movements in the morning immediately lowers it. It is significant that in most cases of chronic glaucoma the diurnal variation is very much exaggerated; and in case of doubtfully raised tension it is a wise procedure to take the tension of the eye while the patient is still in bed and before the activities of the day are commenced.

Operative Akinesia.—The enormous influence of the extra-ocular muscles on the intra-ocular pressure demonstrates the necessity for adequate akinesia in all intra-ocular operations. When it is remembered that a relatively mild contraction of the orbicularis raises the intra-ocular pressure from 27 to 53 mm. Hg, the danger of loss of vitreous in a cataract extraction is obvious unless this muscle is thrown out of action. It follows that in all such operations the orbicularis should be paralysed, either by injection of the facial nerve as it crosses the ramus of the mandible or by a local injection around the orbit: the former method is the prettier, the latter the easier and more certain. Further, the action of looking down raises the pressure of the eye by the contraction of the recti, a rise which becomes quite marked if the action is forced. If every precaution is to be taken, a retro-bulbar injection of novocaine should be employed. This should be employed as a very dilute (0·25 or 0·5 per cent.) solution injected immediately before commencing the operation so that the muscles are not wholly paralysed but merely weakened, allowing the patient to look down but not to do so forcibly; or alternatively, a stitch should be inserted into the superior rectus so that the eye can be adequately controlled. Such a procedure incidentally infiltrates the ciliary ganglion thus rendering the inner eye completely anaesthetic, and results in a degree of immobility and control which has to be seen to be believed.

REFERENCES

Colle, J., Duke-Elder, W. S. and **Duke-Elder, P. M.**—*Jl. Physiol.*, Vol. LXXI, p. 1. 1931.
Duke-Elder, W. S.—*Jl. Physiol.*, Vol. LXI. p. 409, 1926,
Duke-Elder, P. M. and **W. S.**—*Proc. Roy. Soc.* (B), Vol. CVII, p. 332, 1930.
Duke-Elder, P. M. and **W. S.**, and **Colle. J.**—*Brit. Jl. Ophthal.*

NOTE.—Blocks for illustrations, Fig. Nos. 1, 2, 3, 4, 7, 9, 10 and 17, kindly lent by Henry Kimpton.

SIR WILLIAM READ'S TREATISE OF THE EYES

BY

ARNOLD SORSBY

LONDON

ACCORDING to Hirschberg, Sir William Read published a "Treatise of the eyes containing a short, but exact, description of the structure, situation . . . . as also causes, symptoms and cures of 130 diseases incident to them," London, 1706. This information, he states, is obtained from the *Biog. Lexicon*, Vol. IV, 683; Haller, *Bib. chir.*, 1,574, only gives the short title " Diseases of the Eye, 1706," taken over by Beer, *Rep.*, Vol. I, 12. Neither Haller nor Beer seems to

have seen the book. Nor could Hirschberg find it in either the German or English libraries.

T. H. Shastid, in the American Encyclopaedia of Ophthalmology, gives the same title as Hirschberg, and adds that the book seems to be no longer extant.

The Dictionary of National Biography gives a different name for Read's book: "A short but exact Account of all the Diseases incidental to the Eyes," whilst the date is the same, 1706. The book was obviously seen by the writer of the notice (Thomas Seccombe) for a reference is made to some of its contents (the cures

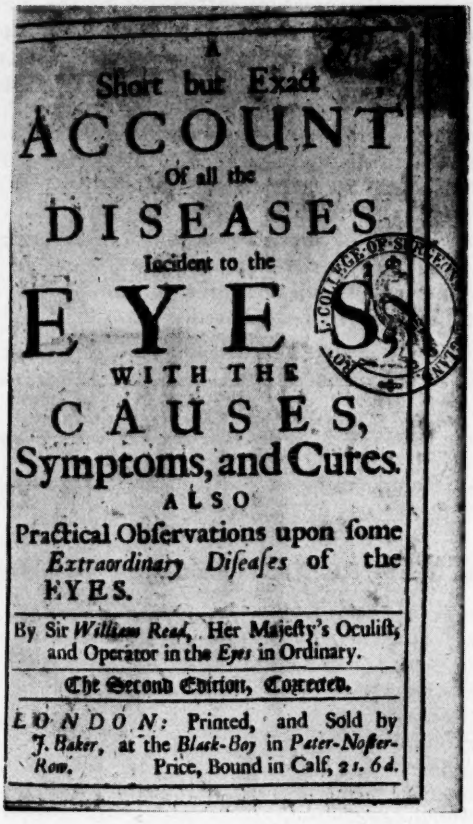

A
Short but Exact
ACCOUNT
Of all the
DISEASES
Incident to the
EYES,
WITH THE
CAUSES,
Symptoms, and Cures.
ALSO
Practical Obſervations upon ſome
Extraordinary Diſeaſes of the
EYES.
By Sir *William Read*, Her Majeſty's Oculiſt,
and Operator in the *Eyes* in Ordinary.
The Second Edition, Corrected.
LONDON: Printed, and Sold by
J. Baker, at the *Black-Boy* in *Peter-Noſter-Row*. Price, Bound in Calf, 2*s*. 6*d*.

FIG. 1.

Title page of book described in Dictionary of National Biography and by R. R. James.

by Read's styptic water reported in "the latter portion of the work.")

R. R. James gives an excellent account of the book mentioned in the Dictionary of National Biography. James states that the work is "rather a scarce item; the Library of the Ophthalmological Society does not contain a copy of it, but there is one in the Library of the Royal Society of Medicine." The transcript given of the title page does not contain any date of publication, but James states that the book appeared in 1706.

To this information, conflicting as to the title of the book published by Read in 1706, must be added the fact that the book as given by Dictionary of National Biography and James, is entered in the Catalogue of the British Museum as a second edition. (No first edition of a book by Read is entered). The fact that the book is a second edition seems to be taken from the title page, which states "The Second Edition, Corrected," a statement also to be found on the copy in the possession of the Royal Society of Medicine (Fig. 1). Both these copies have no date of publication. A third copy, in the possession of the Royal College of Surgeons, differs in no way from the two others. No book by Read is indexed in the Catalogue of the Surgeon-General's Library.

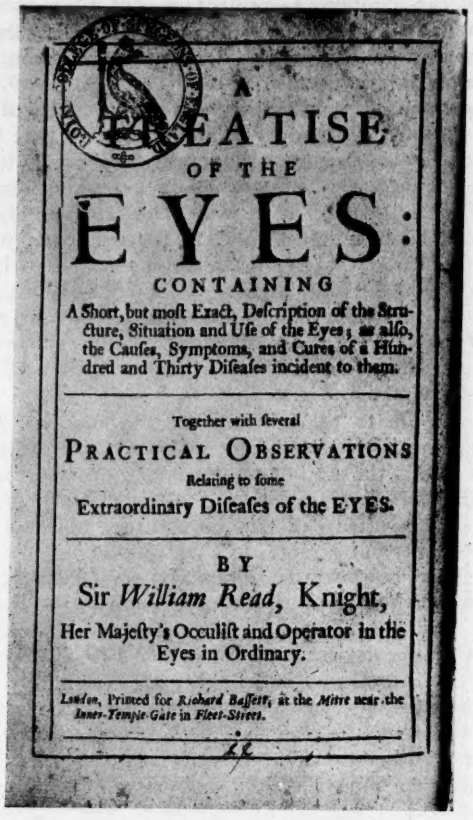
If these facts are to be taken on their face values, Sir William Read, quack, mountebank and oculist to Queen Anne, and to George the First, is the author of two books on the diseases of the eyes, both published in 1706; one of these books went into a second edition; and of these three books, only three copies of the second edition of "A Short but Exact, etc.," are extant.

The position, however, is distinctly less complicated. The difficulty is solved by a copy in the possession of the Royal College of Surgeons. This bears the title indicated by Hirschberg, as can be seen from the accompanying photograph (Fig. 2). No other copy of this work could be traced in London.

A comparison of these two books shows the text is identical, in spite of the different title pages. The "second edition, corrected" of "A short but exact Account, etc." is not a second edition of a first edition no longer extant, but of the presumably earlier "Treatise of the Eyes." Furthermore, the "second edition corrected" is certainly not more than a reprint in which there is no modification to the extent of a comma; the type had clearly not been reset.

The title pages of both these books are undated. But, in the "Treatise of the Eyes" there is a subsidiary title page which follows p. 162 and precedes the "Practical observations relating to extraordinary diseases of the eyes." This page is shown in Fig. 3; it bears the date 1706. No such title page is present in the three copies of the "Short but exact account," but seems to have been

there at some time or other; for an unevenly cut margin is clearly seen in all the three copies, and is especially marked in the copy at the Royal College of Surgeons, in which the page has been so badly cut out that there remains in one place the black printed line which



A
TREATISE
OF THE
EYES:
CONTAINING
A Short, but moſt Exact, Deſcription of the Structure, Situation and Uſe of the Eyes; as alſo, the Cauſes, Symptoms, and Cures of a Hundred and Thirty Diſeaſes incident to them.

Together with ſeveral
PRACTICAL OBSERVATIONS
Relating to ſome
Extraordinary Diſeaſes of the EYES.

BY
Sir *William Read*, Knight,
Her Majeſty's Occuliſt and Operator in the Eyes in Ordinary.

London, Printed for *Richard Baſſett*, at the *Mitre* near the *Inner-Temple-Gate* in *Fleet-Street*.

FIG. 2.

Title page of book mentioned by Hirschberg and regarded as no longer extant.

framed the contents of the title page. Furthermore, this section of Practical observations, etc., with its separate title page, is separately numbered, the title page being [1, 2] and the text beginning on p. 3. The separate numeration is present in the "second edition, corrected," but p. 3 follows immediately on

p. 162. Absolutely conclusive is the fact that the M_2—corresponding to pp. [1-2], is missing; M_3 follows on M; for this reason the British Museum enter their copy as damaged. The title page, with its date of 1706, is thus omitted from "the second edition,

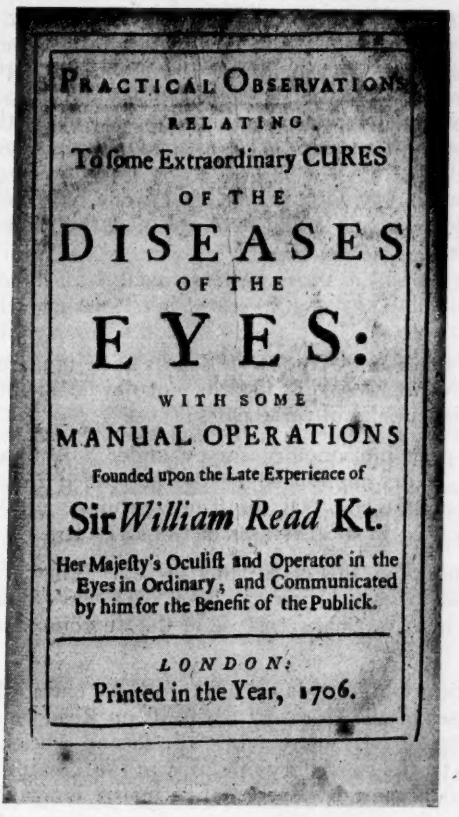

PRACTICAL OBSERVATIONS
RELATING
To some Extraordinary CURES
OF THE
DISEASES
OF THE
EYES:
WITH SOME
MANUAL OPERATIONS
Founded upon the Late Experience of
Sir *William Read* Kt.
Her Majesty's Oculist and Operator in the Eyes in Ordinary; and Communicated by him for the Benefit of the Publick.
LONDON:
Printed in the Year, 1706.

FIG. 3.

Subsidiary title page of book illustrated in Fig. 2.

corrected" by the simple process of excision, and the only other change in the book is the substitution of a different main title page. It should also be added that the original issue contains four pages at the end of the book, which are missing in the re-issue, these consisting of two-and-a-half pages of publisher's announcements of

other books, the rest being blank. It would, therefore, appear that a second edition was never printed, the remains of the first and only edition being done up to bring out a "second edition, corrected." Presumably it was brought out after 1706, this probably being the reason why the subsidiary title page with its date was cut out. What reasons prompted Read to do this is not a matter of great significance. That some difference with the publisher was the cause is suggested by the fact that the title page of the first issue bears the imprint of the publisher; in the later title page the publisher's name is omitted and instead that of the printer and bookseller appears. Support to this view is lent by the omission in the re-issue of the four end pages containing the publisher's announcements.

Thus do Read's two Ophthalmic books, one of which went into a second edition, become reduced to one and the same production and publication.

But, if the titles and editions of Read's book must not be taken on their face value, the book itself is not devoid of interest. The text consists essentially of three parts:

(1) A 23-page introductory survey under 8 headings, the first being "Some errors committed by the pretended Practitioners for the Eyes," and the last "Of the Temperatures and Operations of most Simples used in the Diseases of the Eyes."

(2) The body of the book: pp. 24-162. This is divided into nine Books, all of which, except Book VII, have more than one chapter. It is a systematic treatise of the anatomy and diseases of the eye.

(3) Practical Observations relating to some extraordinary Cures, of the Diseases of the Eyes, by Sir William Read": 40 pages (42 less pp. [1 and 2] (M_2) missing in "the second edition, corrected" and taken up by the subsidiary title page in the Treatise of the Eye). This section is separately paged, and its matter is arranged under 10 headings, the first being "An extraordinary Cure of the Gutta Serena" and the last, "Several useful rules concerning the Preservation of Sight."

The first part of the book contains some excellent observations written in a personal manner, on many points of importance in the diagnosis and treatment of blindness. It gives the impression of being the work of a careful observer and honest practitioner.

The second part is a concise, and on the whole excellent, summary of the teaching on diseases of the eyes to be obtained from

the Greek-Arabian sources, to which constant reference is made. There is nothing original, but what there is, is lucid and well put. The account of the anatomy of the eye is, however, most unsatisfactory. Its teaching ignores altogether the work of the great anatomists and physiologists of the 17th century. The lens is still the "first instrument of sight"; "other humours have no light of themselves, as hath the Chrystallina, which could not receive the light which it received outwardly, if it did not partake of the same within, and partake of it in such a manner that it agreed naturally with the same." The conjunctiva is still derived from the pericranium. This is not the anatomy and physiology of two centuries after the Renaissance, but an account of Galen's teaching. No up-to-date oculist of the beginning of the 18th century could possibly have been so backward in his knowledge. If the 17th century marked little progress in clinical ophthalmology, it laid the firm basis for the remarkable clinical development in the 18th century through its brilliant pioneer work in anatomy and physiology, by Berengario, Fabricius, Ruysch, Fallopius, Keppler, Schreiner, Briggs, and a host of others. The writer of the chapter on the anatomy of the eye is totally oblivious of all this work.

The third section of the book, giving an account of some extraordinary Cures by Sir William Read is "Communicated by him for the benefit of the Publick." It is a vulgar, boasting account of the wonderful properties of his Styptick water for the cure of blindness and cancer; nor does the author hide the light of his superior skill under a bushel. There is nothing of any significance in this section: it is no better and no worse than the endless similar efforts of quacks of all ages and climes.

Two consecutive extracts from this section (pp. 17-19) will more than suffice:—

An Extraordinary Case, of the stopping of a violent Effusion of Blood.

To give you another Instance of the marvellous effects of a good Styptick, you must know that within a little time after was recommended to my Care, one Mrs. Noles of Hedscox, in the County of Suffolk. She had a Wen of at least Ten Pounds Weight upon her Right-Arm, which being a great hindrance to the use of the said Arm, she desired me to take it off; I leave it to the Judgment of all such as are truly vers'd in the Art of Surgery, Whether the cutting off of an Excrescency of such a bulk must not infallibly be subject to great hazards, were it only for the great effusion of Blood, which in all probability must be the consequence of such an Operation? However, relying upon the excellent qualities of my Styptick Water, I undertook and perform'd the Task, stopt the Blood, and cured the Wound by the external application of the before mentioned Water.

Another very difficult Case, of a Cancerous Excrescency in the Great Corner of the Eye.

Near the same time, viz. in November, 1705, Was recommended to my Care Mr. Seedmore, my Lord Mainard's Butler, who being afflicted with a most dangerous Excrescency of a Cancerous Nature in the Great Corner of the Eye adjoining to the Nose, of an extraordinary bigness, I, after the use of proper Purges, Cordials and Phlebotomy, took away by Incision, and eradicated the whole Cancerous Excrescency, and by the only application of my Styptick Water, answer'd all the further indications of stopping the effusion of Blood, and healing up the Ulcer, by engendring of new and sound Flesh, without the least hindrance of the Sight of the Patient.

I have told you in some of the before-mentioned Cases of this Nature, that as the expelling of the corrosive malignant Humours contained in the Mass of the Blood, which occasion these pernicious Cancerous Ulcers, is endeavoured most commonly by the Practitioners, through the means of Alexipharmicks; so the stopping of the effusion of Blood, which in the ordinary consequence of such like Incisions, whereby the Cancer is totally eradicated, is generally performed by them by Searing. But, considering that the first of these two Remedies does not always answer the expectation of the Practitioner as well as of the Patient; and the second proves very often dangerous, or rather impracticable; by reason of the tenderness and situation of certain parts adjoining to the Cancerous Ulcer (as in the Cases of the Cancers in the Corner of the Eye) or by the spreading of the same malignant Ulcer, into a considerable compass, so as to extend to the great Veins; I have, to obviate these difficulties, prepared a peculiar Antidote appropriated to this Disease, and to be taken inwardly, and at the same time a Styptick Water, to answer all the ends that can be proposed by Searing, but with much more ease and less hazard; the same by its Astringent and Balsamick Quality, not stopping the Effusion of Blood only, but also healing up the Ulcer, without any dangerous Symptoms.

The book is thus a most incongruous production. There is able introductory matter in which good clinical observations are sadly mixed up with "a decided smack of Culpepper" as James puts it. This is followed by a good account of the current teaching of the diseases of the eye, but the description of the anatomy and physiology of the eye is decidedly behind the times. Coming on top of these expositions, written dispassionately and on the whole in a satisfactory manner, is the final section which is a purely personal vainglorious rhodomontade. There is a scientific approach in the first two sections, though one section strikes a personal note and the other is in the strict tradition of good text-book writing. But the third section betrays no scientific knowledge or critical faculty whatever; the author's dexterous Hand and Styptick Water is the burden of its song—admittedly sung for the

Benefit of the Publick. Only a man who at one and the same time could be ignorant and yet full of knowledge of Greek and Arabian literature, thoroughly uncritical and yet a good and honest observer, well acquainted with the classical medical literature, and yet totally oblivious of revolutionary changes introduced during the century preceding his own period—could possibly have written Read's Treatise of the Eyes. The impossible creature postulated never existed, not even in the person of Read, and Read's book could never have been written by Sir William Read. But if the oculist did not write it, the mountebank had a good deal to do with it.

It was the mountebank who came across a copy of "A treatise of one hundred and thirteene diseases of the Eyes, and Eye-Liddes. The second time published, with some profitable additions of certain principles and experiments, by Richard Banister, Mr. in Chyrurgery, Oculist and Practitioner in Physicke . . . London . . . 1622." No subsequent edition of this book is known, so it is likely to have been forgotten and scarce by 1706, and posterity is indebted to Read that he gave it a new lease of life at the beginning of the 18th century, for it did not deserve oblivion. That Read should have seen fit to pass it off as his own production is a doubtful compliment to the excellency of this book; perhaps posterity ought to be grateful that he did not attempt to improve it before re-publication.

The incongruity of Sir William Read's Treatise of the Eyes is not a problem of a multiple personality of the author; it is merely the expression of an ill-balanced juxta-apposition. The first and second parts of Read's book, one giving the personal experience of an honest observer and the other a systematic though out-of-date treatise on the eyes is "lifted" from Banister. Read's own contribution consists of the third part—an achievement that is not incongruous with Read's character, knowledge and ability.

If Read did not attempt to add to the matter he lifted, he did attempt some excision, particularly in the first part of Banister's book, that known as Banister's Breviary of the Eyes. The second part, the systematic treatise of the anatomy and diseases of the eyes is reprinted practically in full, with only an occasional verbal alteration of no significance. The only parts omitted are the preface of one-and-a-half pages (about 200 words) and the marginal headings and references. For reasons best known to himself, Read did attempt to bring the hopelessly archaic anatomical description up to date.

He is, however, much more drastic with the first part of the book —the reprint from Banister's Breviary. Here the text is pruned, and as much as one whole paragraph, the opening one, actually

re-written. As this is about the most radical change in the transcription, parallel passages may be of interest.

BANISTER:

ERROURS AMONGST MANY THAT PRACTISE FOR THE EYES.

It is an usual custome, as soon one complaineth of paine or griefe of the eyes, to have amongst twenty women, nineteene severall medicines told presetly, little notice of the nature of the disease being taken and the power of the medicines almost altogether unknowne.

I will describe the severall meanes which are commonly used and advised to be used by those, who without feare or iudgment use any medicine for any disease of one particular part.

READ:

SOME ERRORS COMMITTED BY THE PRETENDED PRACTITIONERS FOR THE EYES.

Nothing being more common, than as soon as a Patient complains of Pain, or any other Grief of the Eyes, to have recourse to all sorts of Medicines, without any regard to their Vertues or the true Nature of the disease, I will describe the several Remedies commonly used and advised by those who without Fear or Judgment use any Medicine for any Disease of one particular part.

Banister's Breviary is an intensely personal document. He relates how he met "one that had such a cataract at Walshingham in Norfolk" and how he "was sent for from Stamfort, to a Gentleman of great worth in London;" he speaks of another case "at a place called Bridge Casterton near Stafford"; he gives "another Instance of this kind, At old Debnum in Suffolk . . ." and relates of "Another in Newgate-Market in London, at the black boy." He also tells of what has been related to him concerning "a Beer-brewer in Southwark;" and further that "having by frequent and reitrated Experience, observed great variety of Symptoms and Accidents in the couching of Cataract, I will in their place discover some of them for the satisfaction of the careful Operator and the ease of the aggrieved Patient." All these personal notes, written in 1621, appear as fresh as ever under Read's name in 1706. It must be granted, to Read's credit, that if he did not add one syllable of text, the passages he omitted are not of great value.

Read's indebtedness is not confined to Banister, for what passes as Banister's Treatise is not the work of Banister only. The systematic treatise as distinct from the Breviary is a translation from Jacques Guillemeau's *Maladies de l'Oeil*, published in Paris in 1585. The history of this book in its English translation, and Banister's share in its production, is a problem that has no immediate bearing on Read. Suffice it to say that Read's book is, therefore, a threefold composition, first an abbreviated edition of Banister's Breviary; secondly a practically complete reprint (for the third time) of J. Guillemeau's book in English, and thirdly—and very much lastly—Read's own effort.

So does Read's 204-page ophthalmic treatise, with its confusing titles and editions, shrink to the small measure of 40 pages vainglorious advertisement of his manual dexterity and his styptic water

for the cure of blindness and cancer. A sad end for one who, though a quack and mountebank, has been ranked by historians in the illustrious company of pioneer British Ophthalmographers. There is no cause to regret the scarcity of his book. It is best buried under the dust of libraries. In the concluding word he took over from Guillemeau's book: Farewel!

REFERENCES

Hirschberg, J.—In Graefe-Saemisch, 2te. Aufl., Bd. 14, Abth. 1, S. 122, Leipzig, 1911.

Shastid, I. H.—*Amer. Encyclop. Ophthal.*, Vol. IX, p. 8,782, Cleveland, 1917.

James, R. R.—*Trans. Ophthal. Soc. U.K.*, Vol XLI, p. 342, 1921.

A LATE SIXTEENTH CENTURY OPHTHALMIC BOOK IN ENGLISH

BY

ARNOLD SORSBY

LONDON

"A treatise of one hundred and thirteene diseases of the Eyes and Eye-Liddes," London, 1622, (Fig. 1) is generally regarded as the earliest separate and complete work on eye diseases in English, a view thus expressed by Casey A. Wood[1] in 1902, and repeated by him in a qualified form in the American Encyclopedia of Ophthalmology. Even Hirschberg[2] mistakenly assumes that the first English book on Ophthalmology was Banister's, a view expressed in the first volume of his *Geschichte* but retracted in the second, where he points out that Banister's book consists largely of an unacknowledged translation from Jacques Guillemeau's *Des Maladies de l'Oeil qui sont en Nombre de Cent Treize aux quelles il est Subject"* (Paris, 1585). Actually the book passing under Banister's name is a collection of five separate treatises, running to 478 unnumbered pages, of which the first part only, named "Banister's Breviary of the Eyes," running to 112 pages, is his. The bulk of the volume, from p. 113 to p. 367, is taken up by the unacknowledged translation of Guillemeau's book, introduced by a separate title page (Fig. 2). The third section, running to 30 pages, is an unacknowledged reprint of Walter Bailey's *"A briefe Treatise concerning the preseruation of the Eye-sight."* Pp. 399-477 are taken up by an introduction of two pages and by a 41-page "Discourse of the Scorby" and a 34-page essay on *"The nature and divers kinds of Cancers or Cankers,"* the first essay being

translated out of "Wyers observations" and the second "was painfully weaved by *Textor*."

That this particular edition, copies of which are easily come across, is not the first ophthalmic book in English, is obvious enough from the title page—shown in Fig. 1—which indicates that *The Treatise, etc.* is "the second time published." Moreover, Richard Banister, in a lengthy dedication To the Reader, draws

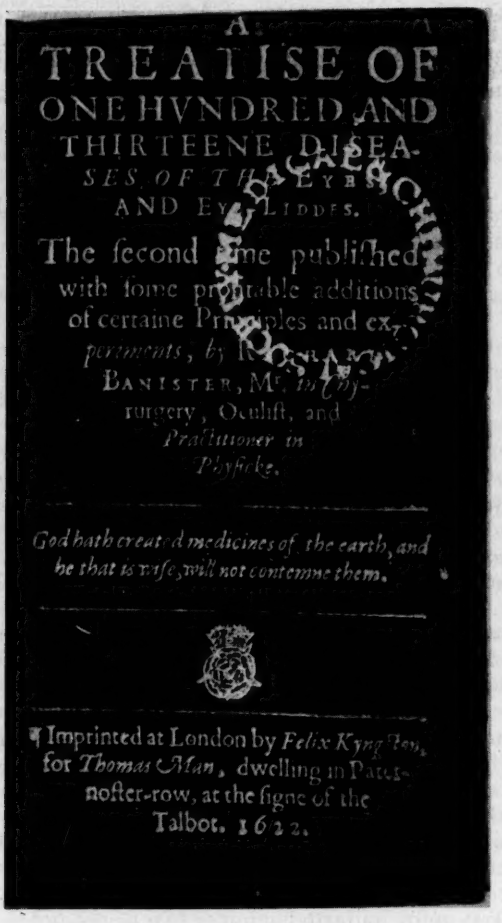
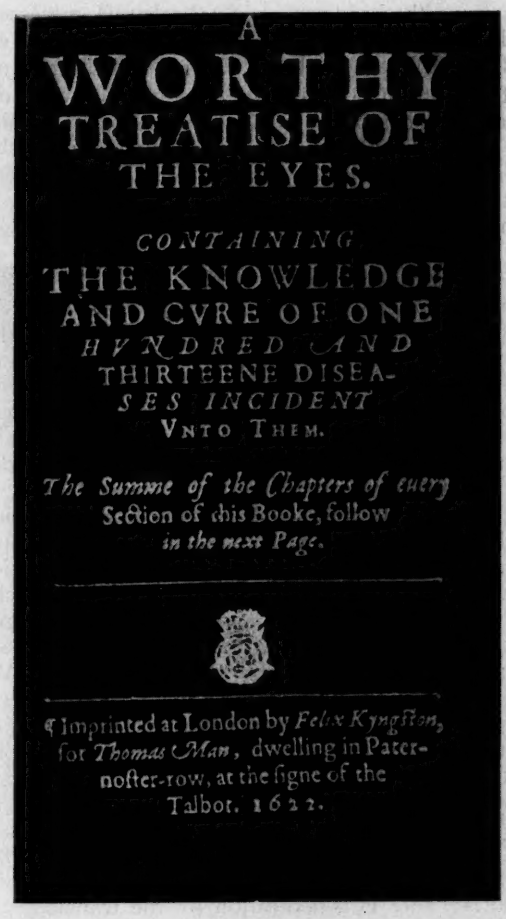


FIG. 1.

Title page of *Banister's Treatise of the Eyes* (so called).


A
WORTHY
TREATISE OF
THE EYES.

CONTAINING
THE KNOWLEDGE
AND CVRE OF ONE
HVNDRED AND
THIRTEENE DISEA-
SES INCIDENT
VNTO THEM.

The Summe of the Chapters of euery
Section of this Booke, follow
in the next Page.

¶ Imprinted at London by Felix Kyngston,
for Thomas Man, dwelling in Pater-
noster-row, at the signe of the
Talbot. 1622.

FIG. 2.

Subsidiary title page following *Banister's Breviary* in *A treatise of one hundred and thirteene diseases*, etc.

attention to the fact that he has "here published the labours of a worthy writer . . . . who describeth an hundred and thirteene severall diseases happening to the eyes and eielids, with their particular causes, symptomes, signes and cures; the worke was dedicated to my forenamed kinsman, and being long since out of print, it is not now to be bought for money; and this booke have I sent abroade againe, that those which delight to labour in this

Art, may runne the readier way to the better successe. I have also added something of mine owne, that through my experience they may finde at first, what I was learning long."

It is unfortunate that Banister or his publisher did not indicate more clearly the composite nature of the book passing under Banister's name, for Banister quite obviously did not intend to claim credit for the part of the book not his, as Hirschberg implies in connection with the Guillemeau treatise, and Casey Wood in connection with the Bailey reprint.

This is seen all the more clearly from two further references Banister makes to the book in the Breviary. In the section headed "The mistaking of the use of some medicines, spoyles many an Eye; as thus" he refers the Gentle Reader to "find in the treatise of the Eyes, dedicated to my kinsman, a learned description of the severall diseases of the Eyes . . . I will save a labour for adding an Antidotary to his treatise." In the last section but one he excuses himself for not dealing at greater length with cataract: " I need not; for that is sufficiently and learnedly handled in my kinsman's former treatise of the Eyes (and Doctor Barrowes Method of Physicke)* translated into English: to which bookes I referre the Reader for his better instruction." The position is made clearer still by an examination of the first edition of the translation of Guillemeau's book, the existence of which, though definitely indicated by Banister, both on the title page and the quotations from the dedication text, does nevertheless seem to have escaped the notice of both Hirschberg and Casey Wood.

The title page of the first edition (Fig. 3) clearly shows that the "One hundred and thirteene diseases" is a translation from Guillemeau. Furthermore, the composite nature of the book passing under Banister's name is already apparent in his first edition, which consists of all the parts of the second excepting Banister's Breviary. A comparison of the texts of the two editions shows the second to be a re-issue, the only changes apart from reset type, being minor alterations in spelling. Certain other points are also brought out. There is a dedication by the translator, "A.H.;" the authorship of the essay on Preservation of the Eye-sight is given and the identity of Textor, the author of the essay on Cancer, is indicated on the title page as being the translator, A.H. Furthermore, the strange juxtaposition of two works on the eye with essays on scurvy and cancer finds some explanation in the dedication of this first edition.

This dedication by the translator is addressed to his "loving

* No brackets in the original. This phrase is obviously wrongly placed, for the qualification "translated into English" could not apply to Phillip Barrough's Methode of Physicke, an English work that ran into many editions. [1st edition, 1590; 9th (or later) edition, 1652]. Ophthalmologically it is of no significance.

friend Mr. John Banester, Chirurgian," the "neare and deare kinsman" who appears in the preface of Richard Banister in 1622. A.H., the translator and author of the essay on Cancer, must have been an intimate friend of John Banister, for Banister's Compedius Chirurgerie (1585) contains a prefatory letter by A.H. again addressed to his "loving friend, Master Banester." The accident of friendship and printer's material probably dictated the

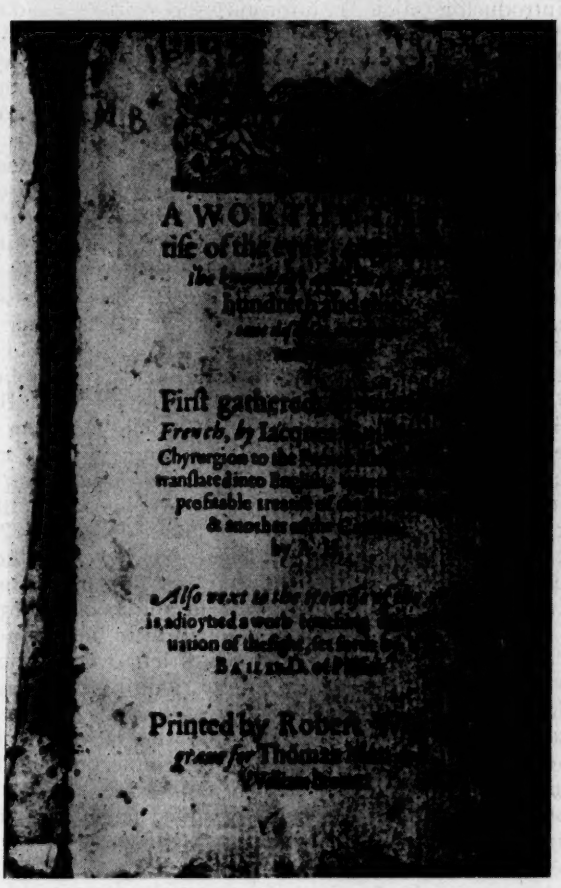


FIG. 3.

Title page of the translation of Guillemeau's *Maladies de l'Oeil*.

peculiar combination of the essays in the first edition. The essay on cancer by A. H. appears in a book which he translated, and with which he was associated sufficiently closely to be able to dedicate it to Banister; whilst the presence of the two other sections seems to be due to the printer's efforts. Apart from a certain appositeness in the presence of Bailey's essay on the Preservation of Eyesight in a book on eye diseases, there is also the fact that Bailey's discourse first appeared in 1586, printed by the same hand—Robert Waldegrave. The essay on scurvy was included with an introductory apology, informing the courteous and careful Chyrurgian that "this Treatise of the Scorby has beene long time prepared for thee, but it wanted a prosperous gale of winde." This remark, part of a longer introduction, is unsigned, but it is probably by the printer, notes by the printer being then a common practice. The concluding sentence lends support for this view: "The authors deserve commendacion, the interpreter deserveth friendly acceptaunce, the Printers discourage both. Farewell." The "prosperous gale of winde" for which Waldegrave was waiting may very well have been an opportunity of publishing this small essay on Scurvy together with some larger work.

Incidentally, this translation of Guillemeau and its associated essays has an interesting history of its own. Of the four copies that have been traced of this book, three show the four-fold nature described, but the fourth, though obviously the same publication, seems to be an earlier issue, and consists of only 3 parts, Bailey's essay being the missing part (Figs. 4*a*, 4*b*). The inclusion of this essay seems to have been an afterthought, for not only is it missing from the title page and book of the first issue, but there is also positive evidence that it is definitely an interpolation, put in after the book was printed. This is shown by the fact that its 22 pages appear unnumbered between the Guillemeau treatise and the essay on cancer, and more conclusively by the fact that it is printed on sheet K., this sheet appearing twice in the books containing Bailey's essay; the second sheet K is identical in both issues, and is correctly placed. The two blank pages left over in the interpolated sheet K seem to have been cut out, judging by the remains of the cut margin to be found in the place of the page. Furthermore, the loose bindings of the two copies at the Royal Society of Medicine allows a good examination of the connections of the title page. In the original issue it is seen as part of sheet A; in the latter issue it is obviously a separately added page, kept in place by a projecting edge beyond the folding of the pages.

Whatever the origin of the composite nature of this volume, its later issue, with its fourfold character, was taken over in its entirety, barring the title page and the dedication, by A. H., and re-published "with some profitable additions" by Richard Banister.

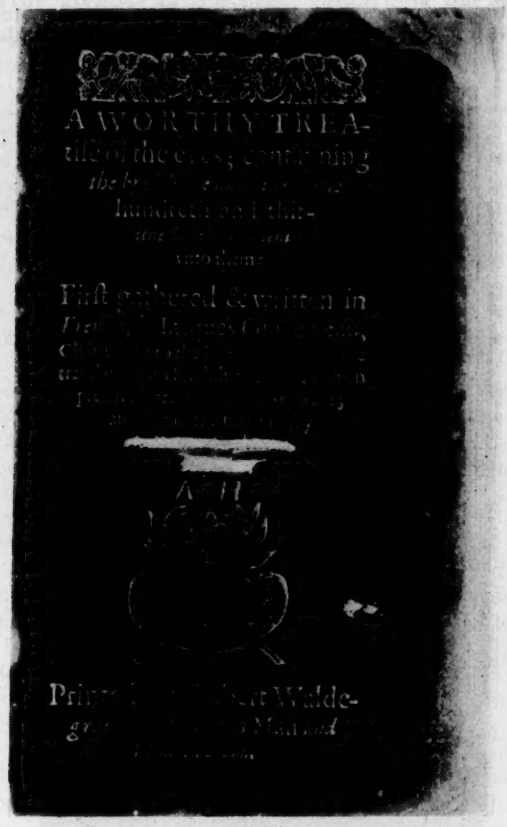


FIG. 4*a*.

Title page of an earlier issue than the one shown in Fig. 3. The name of the translator and author of the treatise on Cancer is obliterated by an ink mark and replaced by initials—A.H., the same as in the title page shown in Fig. 3.

Whilst this definitely disposes of any claim for him as the author or even the editor of the first systematic ophthalmic book in English, it also clears him from the charge of "lifting" proferred against him by Hirschberg and Casey Wood.

It is perhaps worth adding that Banister's position in connection with the 1622 edition was fully described as long ago as 1780 by Aiken,[3] who, in his sketch of Richard Banister, points out

Guillemeau's and Bailey's responsibilities. Hutchinson,[4] in 1799, repeats Aiken's observations, which are further repeated in the Dictionary of National Biography.[5] Aiken also states that the

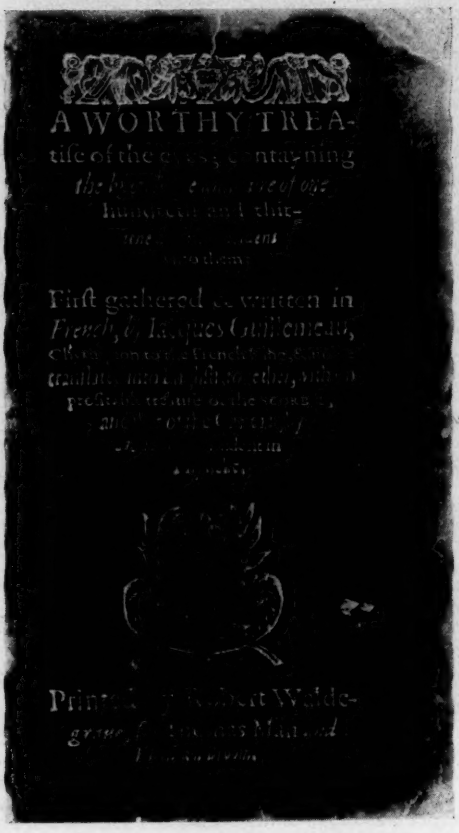


FIG. 4*b*.

Same as 4*a*. Ink mark washed out. The book belongs to the Bowman Library (Royal Society of Medicine).

translation from Guillemeau was done by "one A. H." He must, therefore, have seen a first edition of the translation; as, however, he does not catalogue the reprint of Bailey in this edition, amongst the various editions of Bailey's paper, it seems likely that he saw the first issue only of the translation of Guillemeau.

A worthy Treatise of the eyes; contayning the knowledge and cure of one hundreth and thirteene diseases incident unto them

The book would appear to be distinctly rare. Aiken, in 1780, probably knew the book; James[6] noted it in 1922 among the treasures of the Bowman Library. There is no copy at the British Museum, nor at the Royal College of Surgeons. Two copies are available at the Royal Society of Medicine, one belonging to the Society and the other in the Ophthalmological Society (Bowman Library). Another copy is to be found at the Medical Society of London. Through the Short-title Catalogue of English books,[7] a fourth has been traced to the Cambridge University Library. The book is not indexed in the Catalogue of the Surgeon-General's Library.

The book is in duodecimo size. In its second issue it contains 305 pages of which 26 are devoted to the title-page and introductory matter; 190 to the text of Guillemeau's treatise; 22 to Bailey's essay; of the remaining 67 pages two pages are taken up by dedication To the Courteous and careful Chyrurgian, 36 pages by Wyers and 29 by A. H. on Cancer. The first issue only differs in its title page and in the absence of Bailey's essay.

In the first issue, the identity of A. H. was disclosed on the title page, but in the only copy seen the name was blotted out with ink. Unfortunately the name does not show clearly after washing out the ink, but it seems to have been "A. Hunton." (Figs. 4*a*, 4*b*.) His dedication to Banister, who lived in Nottingham, is from "E. M. in N."—probably East Markham in Nottinghamshire. No information on A. Hunton could be traced.

Of the four copies examined, only two were perfect, one belonging to the Medical Society of London, and the other to the Ophthalmological Society (Bowman Library, Royal Society of Medicine), the first being a second issue, and the second a first issue. In the copy belonging to the Royal Society of Medicine, Sheets A and B are missing; the text begins on C in the middle of a sentence, though the page is numbered 1. The copy in the Cambridge University Library contains the full text of Guillemeau, but the introductory matter is missing. It begins at B.2; furthermore, though its title page refers to the essay by Bailey, this is not present.

In all the four copies the pages are badly numbered. The introductory matter is not numbered at all, numeration beginning after 22 pages of text, on C. Irregularities occur further on. Thus, p. 48 is followed by 85-90; 90 by 19; 92 by 107; 107 by 104-107; 119 by 200, 201, 122, 123, 102, 205, 126, 127, 208, 129. In spite of this topsy-turvy numeration, the text is continuous.

As shown on the title page, the book was printed by Robert Waldegrave, for Thomas Man and William Brome, who were the publishers.

Date of publication:

Unfortunately there is no indication of the year of publication of this book, and one has to rely on indirect evidence only. The earliest date of publication could not be before 1585, the date of the appearance of Guillemeau's book in French; the latest date must be before 1622, when the book had "long since" been out of print. Robert Waldegrave printed books between 1578 and 1603, but as Thomas Man and William Brome entered into partnership in 1585 and William Brome was dead by October 4, 1591[8] (books being then entered under the name of Widow Brome), the date of publication is narrowed down to between 1585-91. A search through the Transcripts of Stationer's Register[9] for the years in question fails to reveal any entry of the book, but the last book entered in London under Waldegrave's name is 1589, in which year he became fugitive to avoid arrest for printing Puritan literature. It is therefore likely that the book was printed between 1585 and 1589. The book may never have been registered at Stationer's Hall, though it is just possible that it was entered on May 13th, 1588, for on that date there is an entry against Waldegrave's name: "A copie whereof he is to bring the title." Presumptive evidence that the book was published after 1585, in or after 1586, is the fact that Walter Bailey's discourse was first printed in 1586, by Waldegrave (and entered by him in Stationer's Hall). (Bailey's monograph, fully described by D'Arcy Power,[10] had an extraordinary vogue; first printed in 1586, it had a sixth edition in 1602, and subsequently appeared in combination with other works in 1616, 1622, 1626, 1633, and by itself in 1654 and 1673. Of the intermediate four editions between 1586 and 1602, nothing is known, and the reprint in this undated translation of Guillemeau is undoubtedly one of the missing editions, unless indeed it was published before the presumably first edition of 1586. There is no special title page for Bailey's monograph in the Guillemeau-Bailey-Wyers-A. H. compilation. The text differs in no way from that of the other editions, apart from variations in spelling.)

I am indebted to Sir D'Arcy Power and to Mr. H. E. Powell and Mr. G. F. Home of the Library of the Royal Society of Medicine, for much help and advice in the work recorded here.

Summary

1. The first edition of the translation into English of Jacques Guillemeau's "Maladies de l'Oeil" is described. The translation was done by one A. H. (? A. Hunton.) Two issues seem to have appeared. Of the four copies traced three belong to the second issue and one to the first.

2. The book was published between 1585 and 1589.

3. The second issue differs from the first in containing Walter Bailey's "Briefe Treatise concerning the Preservation of the Sight" (constituting one of the missing editions of this treatise) and in giving the initials of the translator instead of his name, on the substituted title page.

4. Both issues were composite works; in addition to the translation by Guillemeau, they also contain an essay on Scurvy by Johan Wierus, and one on Cancer by A. H.

5. The second issue, with its four component parts, was reprinted in 1622, together with A Breviary on the Eyes written by Richard Banister in 1621. This collected work of 5 sections has mistakenly passed down as being a Treatise on the Eyes by Richard Banister. No such claim was made by Banister.

REFERENCES

1. **Wood, C. A.**—*Jl. Am. Med. Assocn.*, Vol. II, p. 1152, 1902; *Amer. Encycl. Ophthal.*, pp. 879, 5656, 8754, 8782; *Bull. Soc. Med. History*, Chicago, Vol. II. p. 147, 1920.
2. **Hirschberg, J.**—*Geschichte der Augenheilkunde (Graefe-Saemisch)*, 2nd Edition, Vol. I, p. 20; Vol. II, p. 330.
3. **Aiken, J.**—Biographical Memoirs of Medicine in Great Britain. London, 1780.
4. **Hutchinson, B.**—*Biographica Medica*. London, 1799.
5. Dictionary of National Biography. Article on Richard Banister.
6. **James, R. R.**—The Bowman Library. *Brit. Jl. of Ophthal.*, Vol. VI, p. 515, 1922.
7. **Pollard and Redgrave.**—Short title Catalogue of English books, 1475-1640. London, 1926.
8. **McKerrow, R. B.** (Editor).—A Dictionary of Printers, Booksellers in England . . . of English books, 1557-1640. London, 1910.
9. Transcripts of Stationers' Registers by E. Asher. Vol. II and Vol. V.
10. **Power, Sir D'Arcy.**—Dr. Walter Bayley and his works. 1529-1592. *Medic.-Chirurg. Trans.*, Vol. XC, p. 415. 1907.

OPTIC ATROPHY AFTER INJECTIONS OF ARSENIC

BY

T. HARRISON BUTLER

BIRMINGHAM

SOME ophthalmologists think that the optic neuritis and atrophy seen in syphilitic patients who have been treated by injections of organic arsenic preparations, the *neuro-recidiv* of the Germans, may at any rate occasionally, be due to direct toxic action of the drug upon the nerve. It is recognised that the penta-valent preparations are more liable to cause atrophy than the tri-valent. Most of us have seen tragic examples of complete amaurosis caused by atoxyl and soamin, but the general opinion is that N.A.B. and similar drugs are harmless in this respect. Tryparsamide, a penta-valent product, if used in small doses, and with reasonable precautions, is also considered to be safe.

I have had under my care twins suffering from congenital syphilis, one of whom was treated with arsenic, the other had no treatment at all. Whereas both children must have had a similar type and degree of syphilitic infection, and both must be held to have a similar nature, we have a very accurate control: the virulence of the infection is the same, the resisting power of the host is the same.

The mother of the twins, both girls, came to the Coventry Hospital soon after the birth of her children. She was found to have bilateral optic neuritis. This was at first held to be associated with her pregnancy, but the Wassermann reaction was strongly positive, and she was eventually found to be suffering from optic tabes. Her discs rapidly became completely atrophic, and recently she died in a mental hospital from her syphilitic infection.

The twins were brought to Coventry Hospital in August, 1927. They were very much alike, but Jean was larger than Joan.

The notes of the cases are as follows:—

Jean W., aged 5 years. Attended on August 22, 1927. The child has the typical appearance of congenital syphilis, with Parot's nodes, and scars round the mouth. Her Wassermann reaction is ++. Her refraction is +4·0 D.sph. and +2·5 D.sph. (R. and L.). There is convergent strabismus of the right eye, and both eyes have poor fixation. No note was made of any choroiditis or pallor of the optic nerve.

Jean was sent to the Venereal Department, where she received 18 injections of *Sulphostab*, a tri-valent preparation. She also had Pil. Hydrarg. cum Cret, and Syrupus Ferri Iodidi. The mother was then instructed that the child was to have three months' rest and return

for another course of injections. Owing to the illness of the mother, the child did not appear again.

On March 7, 1932, Jean came to me as a private patient. I had not seen her for four and a half years.

Present condition.

Under atropine, V.R. with +3·5 D.sph=6/60.
V.L. with +1·5 D.cyl. at 105°<6/60.

The best vision with the left eye is obtained with the head held on one side. Fixation with the left eye is poor. It will be noted that there is a considerable change in the refraction of the left eye.

Fundi.—It was difficult to make a good examination owing to nystagmoid jerking.

Right Eye.—The disc is very pale, and the vessels are small. The appearance is one of consecutive atrophy. There is extensive disseminated choroiditis; pigmentation and areas of yellowish exudate.

Left Eye.—The disc has a similar appearance to that of the right, but the pallor is not so extreme. There is disseminated choroiditis with pigmentation, but no exudate.

The left eye diverges 5 degrees.

I saw the child again on April 11 when the effect of the atropine had passed off. To my surprise she now read 6/60 with her right eye and 6/15 with her left. Holding the types close to her eye she read J.4 and she is able to learn at an ordinary school.

Joan W., aged 5 years. Attended at the Coventry Hospital on August 22, 1927.

She, like her sister, had the typical stigmata of congenital syphilis.

Her refraction was +3·0 D. sph. (R. and L.).

No note was made of any abnormality of the fundus, but, as all cases refracted are examined with the ophthalmoscope, we can assume that both these children had no abnormality of the choroid and optic nerve in 1927.

On March 22, 1932, Joan came to see me as a private patient. I had not seen her for four and a half years. She had had no treatment, and her Wassermann reaction had never been taken. This apparent neglect was due to the fact that her mother was nearly blind, and too ill to attend to her.

Present Condition.—Refraction under atropine: V.R. with +3·0 D.sph. = 6/6. V.L. < 6/60. Refraction −4·0 D.sph., but no improvement took place.

The discs are normal, no trace of pallor is seen; the right choroid shows a slight pepper and salt pigmentation. The left shows a diffuse choroiditis; there are areas of white infiltration, especially along the vessels.

The left eye converges 40 degrees. It will be noted that the left

eye has become myopic, the original refraction of +3·0 D. having changed to −4·0 D.sph. This change is not uncommon in children with congenital syphilis, especially after an attack of interstitial keratitis. The choroiditis did not seem to be sufficient to account for the amblyopia, and the macula was unaffected, so I ascribe the amblyopia of the left eye to the change in refraction and the squint.

Comment.—It is quite obvious that the condition of Jean, the child that was treated with sulphostab, is far worse than that of her sister who received no treatment, and yet both children had the same infection, and similar natures. The logical conclusion is that in this case the arsenic preparation had a deleterious effect upon the optic nerve. It would, however, be wrong to infer from a few isolated examples that tri-valent arsenic preparations are dangerous and liable to cause optic atrophy. The fact that they have been used in thousands of cases without any ill effect upon the optic nerve proves the contrary, but we cannot escape the conclusion that occasionally the optic nerve may suffer.

I cannot explain the discrepancies in Jean's vision with and without atropine, but a long experience in school clinic work has taught me that children are apt to behave in this way.

RETINAL DETACHMENT OCCURRING PROBABLY AFTER HERPES ZOSTER OPHTHALMICUS IN A CASE OF SIMPLE GLAUCOMA

BY

A. A. B. SCOTT

DUNDEE

MR. R., aged 64 years, consulted me in January, 1928, complaining that the vision of the left eye had been failing for a year, and that the eye was now almost blind.

Examination of the left eye showed dilated conjunctival vessels, a slightly steamy cornea, pupil 4 mm., regular and inactive, tension (Schiötz) 70 mm. Hg, and vision reduced to seeing hand movements at 1 foot distance on the temporal side only. Transillumination was normal. In the right eye the optic disc was flat and of good colour, the retinal arteries were a little sclerosed, tension was 25 mm. Hg, and vision 6/6 easily with correction for a low hypermetropic astigmatism.

As regards the subsequent history of the right eye, it need only be mentioned that by the use of eserine drops, increased gradually in strength and frequency, the tension has been kept at 20 mm. Hg, with 6/6 vision, and normal visual field.

When he was seen again a week later, the eserine had reduced the tension of the left eye to 40 mm. Hg; the cornea was clear, and the whole of the fundus could be viewed. The disc was pale and deeply cupped. He was referred to his physician, Dr. G. Rankine, who found that the blood pressure was raised; this condition responded to suitable treatment. He came to see me every four or five months for observation of the right eye. By May, 1929, there was no perception of light in the left eye. On October 31, 1929, the left eye was examined for the last time before the attack of herpes; the tension was 40 mm. Hg, at which level it had remained for the previous twenty months.

He returned on May 15, 1930; during the interval, Dr. Rankine had attended him for an attack of herpes of the ophthalmic division of the left fifth nerve, which commenced in February. On enquiry, it was ascertained that there had been conjunctivitis, but that the side of the nose had not been affected. Examination showed the typical scars on the left side of the forehead. The conjunctival vessels were dilated, and there was a small superficial central corneal nebula. Sensation, tested by cotton wool, was markedly impaired over both the cornea and conjunctiva. The pupil was regular and contracted by eserine. The tension was 18 mm. Hg. Through the contracted pupil it was possible to make out a retinal detachment; on instilling homatropine, the pupil dilated regularly and normally, and the retina was seen to be detached, except above the disc for an area of about a quarter of its extent. The detachment was deepest below, where it could be focused with a +8 D. lens, the refraction of the disc being emmetropic. No holes or tears were visible; transillumination was normal. There were no corneal precipitates or vitreous opacities.

By the end of 1930 the detachment had become opaque and more extensive, and there was incipient cataract. The last examination was on March 9, 1932; the lens was then too opaque for the fundus to be seen. The tension was still 18 mm. Hg.

Commentary.—The condition of the left eye, prior to the attack of herpes, would appear to be simple glaucoma. In support of this, there was the absence of any sign of intra-ocular inflammation, haemorrhage, or neoplasm during the period from January, 1928, to October, 1929; there was also the tendency, kept in check by increasing dosage of eserine, for the tension of the right eye to become raised.

It must be admitted that the left fundus was not under observation during the three months that elapsed between October, 1929, and the onset of the herpes, so it cannot be definitely established that the detachment was subsequent to the herpes. However, as there was no history of injury, severe cough or physical strain during this time, and as the state of the eye had remained unchanged during some twenty months' observation, the presumption is that

the reduction of tension and the retinal detachment took place after the herpes.

In the literature it is recognised that the intra-ocular tension may become reduced during an attack of herpes zoster ophthalmicus; the writer has not been able to find any recorded case of retinal detachment occurring as a complication. The suggestion is made that in this case the detachment is due to the lowering of the previously high tension. It is not thought that a short clinical note is the place wherein to attempt to explain the mechanism of its occurrence.

WILLIAM BRIGGS, M.D. (1650-1704)

BY

R. R. JAMES

LONDON

ACCOUNTS of the work of William Briggs have long been available in Munk's *Roll of the Royal College of Physicians* and in the *Dictionary of National Biography*; but it may not be out of place to notice him in this journal as an ophthalmologist of the seventeenth century, a date when qualified ophthalmologists were few and far between.

The Briggs family was of respectable antiquity in East Anglia. The pedigree printed in Blomefield and Parkin's *History of Norfolk* (1808) begins with a William atte Brigge, of Salle, *temp.* Edward the First and Second, and living at Salle in 1334. From this William descended Augustine Briggs, son of Thos. Brygge, Esq., of North Wotton, 1546; whose son, Augustine Briggs, of Norwich, was the father of our ophthalmologist.

Augustine Briggs junior was born in 1617 and died in 1684. His wife's name was Elizabeth Aldred. He was a prominent citizen of Norwich. Elected Alderman in 1660, he was named as one of the Aldermen in the new charter given to the City by Charles the Second in 1663. He was Mayor of Norwich in 1670; and in the year 1667 was elected Burgess of Parliament for the City without opposition. This post of M.P. was retained by him at three subsequent elections. Augustine was a benefactor to the City; for, by his will, he made provision for the Boys' and Girls' Hospital (*i.e.*, schools) of the City, and he left a sum of money (£200) to the Mayor and Corporation, the interest on which was to be used yearly for putting two poor boys to convenient trades. These boys were to be chosen from his own ward if possible and in the event of no candidate being forthcoming in any year the

William Briggs M.D. Physician in Ordinary to King William ye 3d
Fellow of the College of Physicians and of the Royal Society &c

WILLIAM BRIGGS, M.D. 1650—1704

UNIV. OF MICH.

interest was to be added to the money in the hanaper (city treasury). William Briggs was his second son. As he was thirteen years of age when he was admitted at Corpus Christi College, Cambridge in 1663,[1] it is obvious that he must have been born in or about the year 1650. He matriculated at Easter, 1663, and was under the care of Dr. Tenison, later Archbishop of Canterbury. He proceeded B.A. in 1666-7; M.A. in 1670; and M.D. in 1677. He was a fellow of his College 1668-1682. On October 26, 1670, he was incorporated at Oxford and then spent some time abroad at the continental schools, visiting Montpellier to work with Vieussens. Briggs was admitted a candidate of the College of Physicians in 1680 and a Fellow in 1682. In that year he gave up his Fellowship at Cambridge and presumably settled in London, for he was appointed Physician to St. Thomas's Hospital in the same year. He was a Censor of the College of Physicians in 1685, 1686 and 1692. He was also Physician in ordinary to King William the Third.

Dr. Briggs married Hannah, daughter and heiress of Edmund Hobart, of Holt, a scion of the Hobarts of Blickling, Co. Norfolk, and died at Town Malling, in Kent, on September 4, 1704; and was buried there on September 11. He left three children, Mary, wife of Thomas Bromfield, M.D., of London; Henry; and Hannah, wife of Dennis Martin, gent. of Loose, in Kent.[2] Munk gives a transcript of a long epitaph to his memory erected by his son, Henry Briggs, S.T.P., in the latter's parish church of Holt in Norfolk. This epitaph appears to have escaped the notice of Blomefield and Parkin as they do not mention it. From it we learn that Dr. Briggs was F.R.S., and that after settling in London, "he practised with great success, and soon became very eminent in his profession. He was particularly famous for his exquisite skill in difficult cases of the eye, and published two valuable treatises upon that subject."

The librarian of the Royal Society kindly informs me that although William Briggs seems to have been recognized by his contemporaries as F.R.S. there is no evidence on the records to show that he was ever proposed or regularly seconded. His name does not appear in the list of fellows, nor did he sign the charter book. There are no letters of his in the letter-books of the Society.

Munk also states that "Dr. Briggs was the author of some interesting papers in the Philosophical Transactions, and of:—

> Ophthalmographia, sive Oculi ejusdem partium Descriptio Anatomica: cui accessit Nova Visionis Theoria. 12mo. Cantab. 1676."

The hypothesis of vibrations as an explanation of the phenomena of nervous action, writes Dugald Stewart, first attracted public notice in the writings of Dr. William Briggs. It was from him that Sir Isaac Newton derived his anatomical knowledge; along

with which he appears plainly from his *Queries* to have imbibed also some of the physiological theories of his preceptor."

Dr. Briggs's portrait, by R. White, was engraved by J. Faber; this very fine mezzotint is reproduced here by kind permission of the council of the Royal Society of Medicine.

This is perhaps the best place in which to correct a small slip in Garrison's *History of Medicine*, where it is stated that William Briggs described the papilla of the optic nerve in 1636. I fancy that this must be an error and that the year 1676 is meant. It is rather surprising that the *Bibliotheca Osleriana* does not appear to contain a copy of either of Dr. Briggs's works. The Bowman Library possesses copies, as do the libraries of the Royal Society of Medicine, the Royal College of Surgeons and the Medical Society. They seem to have been popular in their day for each ran through more than one edition.

Ophthalmographia

This is a duodecimo in Latin of 80 pages excluding the preface, dedication and a rather full synopsis of the contents of the chapters. There are two plates of illustrations which are crude. First published in 1676, the title page is as follows:—

> Ophthalmo—graphia, /sive/Oculi ejusdem partium de—/scriptio/Anatomi-ca /Authore/Gulielmo Briggs A. M. & Coll. Corp./Christi in Acad. Cantab. Socio. /Cantabrigiae, /executebat Joan. Hayes, Celeberrimae Academiae Ty/-pographus, impensis Jon. Hart Bibliopolae/Cantab. 1676./

It is dedicated to Ralph Montagu, Esq., Member of the Privy Council and late Ambassador to the King of France. Briggs acknowledges here, and in his preface, the debt he owes to Vieussens of Montpellier.

The second edition, also of 80 pages, was published in 1687. The title pages of the two copies in the library of the Royal Society of Medicine are slightly different from that of the first edition. The first page repeats the Latin title exactly, and goes on:—

> per Guilielmum Briggs, M.D. Coll. /Medic. Londin. Socium, & Nosocomii Re-/gal. (quod Dr. Thomae dicatur) Medicum/Ordinarium./Editio Secunda ab Auctore recognita. /Londini: /Typis M.C. Impensis Ricardi Green, Bibliopolae/Cantabrigiensis, MDCLXXXVII./

The second title page follows that of the first edition as far as *Socio*, and then has:

> Londini, /Typis M. C. Impensis Richardi Green Bibliopolae/Cantabrigiensis. MDCLXXXVII./.

It would appear to be a reprint of the first edition and the illustrations are the same in each.

It would be unfair to judge the anatomy in this little book by present day standards. The external parts together with the muscles

are fairly well described. In dealing with the obliques Briggs cannot refrain from calling attention to their supposed action in lovers and in the dying by interlarding a quotation from the *Aeneid*, Book 4.

"oculisque errantibus alto
quaesivit caelo lucem ingemuitque reperta."

Dido, rolling on her couch, "and with wandering eyes she sought the light in high heaven, and, as she found it, moaned."

Anatomists had the haziest notions as to the origin of the tunics of the eye at this date. It was generally thought that they were developed from the optic nerve and its sheaths; the nerve providing the retina and the dura and pia the sclero-cornea and choroid. In dealing with the retina Briggs specially notes and figures the papilla. But knowledge was gradually accumulating and we no longer find the lens filling the whole of the inside of the eye as in most of the earlier diagrams; and the retina is postulated as the percipient layer and not the choroid, while the function of the lens in transmitting and refracting the light is recognized. A chapter is devoted to the arteries, veins and optic nerve, in which "animal spirits" figure largely. Next follows an account of the lacrymal gland and a short chapter on peculiarities in structure of animals' eyes.

Marriotte discovered the blind spot in 1668 and as Briggs mentions his name we may conclude that his book was well up to date considering the age in which he lived.

Briggs was practically a contemporary of Sir Isaac Newton at Cambridge.

It is not so much on account of his *Ophthalmographia* that Briggs deserves rescuing from ophthalmic oblivion as on that of his *Nova Visionis Theoria*.

The copy of this work in the library of the Royal Society of Medicine is entitled *editio altera* and is bound up with the second edition of the *Ophthalmographia;* the *Nova Visionis Theoria* being given pride of place. It contains on the title page the signature of "Tho. Wallis. Magd. Coll. Cant. 1718" and a note of the price paid for it, viz. 1/6. Some little time ago I saw a copy for sale in a second-hand catalogue for two guineas, so that its value has appreciated.

The title page runs as follows:—

> Nova Visionis/Theoria,/Regiae Societati Londin./proposita./per Guilielmum Briggs, M.D. Col-/leg. Medic. Londin. Socium, &/Nosocomii (quod Dr. Tho-/mae dicatur) Medicum ordinarium. /Editio Altera. /Londini: /Typis J. P. Impensis Sam. Simpson, /Bibliopol. Cantabrig. & prostant/venales apud Sam. Smith, ad in-/signia Principis in Caemeterio D./Pauli, Londin. 1685./

The copy in the Bowman Library is exactly the same. The dedication is a fulsome production to James the Second, and is

followed by a letter to the author from Sir Isaac Newton, and a *praeloquium* to the reader. The actual text comprises 80 duodecimo pages and there is a formidable illustration which is reproduced here by permission of the Council of the Royal Society of Medicine.

But, before discussing Briggs's New Theory, which, according to Hirschberg[3] "is no theory at all though extolled by A. Hirsch," it may be of interest to record that the Bowman library possesses another copy of both works bound together in one volume 16mo. of 312 pages. This little book was published in Holland in 1686, with an engraved title page which is reproduced, by permission, here.

Title page of 1686 Edition

This engraved page is followed by a title page in which the titles of the two books are amalgamated as follows:—

> Guilielmi Briggs/Med. Doct. Colleg. Med. Londin. Soc. &/Nosocomii Regal. (quod D. Thomae dica-/tum est) Medicini Ordinarii, /OPHTHALMO-GRAPHIA, /Sive/Oculi ejusdem partium/descriptio anatomica, nec non, /EJUSDEM/NOVA VISIONIS THEORIA, /Regiae Societati Londinensi/ proposita. /Lugd. Batavor. /Apud PETRUM vande Aa. /MDCLXXXVI./

This appears to be merely a reprint of the original editions, though, as there are fewer words to the line of print, the pagination is different. The illustrations are the same. It is in contemporary

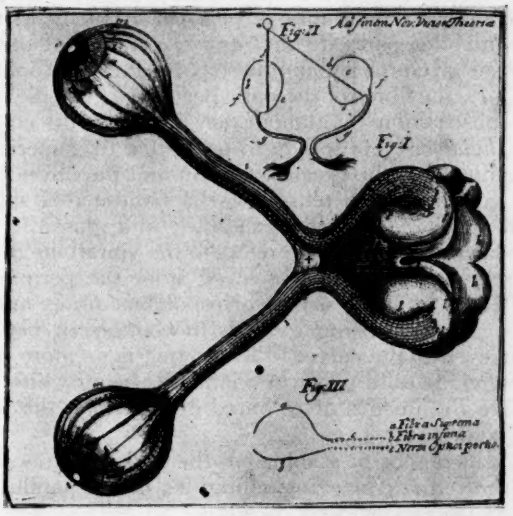


Illustration in the *Nova Visionis Theoria*.

vellum binding and in recording the title on the back, the binder has deprived the author of one of the "g" letters of his name; he appears as "Brigs."

Briggs's preface to the *Nova Visionis Theoria* calls attention to the fact that the *Ophthalmo-graphia* has been already published and hints that he intends to publish later two tracts: one, *de usu partium Oculi;* the other, *de ejusdem affectibus,* if God be pleased to prolong his life.

The *Nova Visionis Theoria* was propounded before the Royal Society in 1681. I find that the index of the *Philosophical Transactions* lists three communications under Briggs's name. (*a*) A Discourse about vision, with an examination of some late objections, Vol. XIII, 171. (*b*) Two remarkable cases in vision. XIV. 559. (*c*)

Philosophic solution of a case of a young man who grew blind in the evening. XIV, 804. The first of these three contains practically the final 45 pages of his little book, with the exception that in the Transactions it is given in English and in the *Nova Visionis Theoria* in Latin. He says that a specimen of his thoughts about vision appears in Mr. Hook's *Philosophical Collection,* No. 6. I assume that this reference will include the first 35 pages of his *Theoria.*

Briggs tries to show that the fibres of the optic nerve as rising from the two protuberances of the *thalami optici* are more concerned in vision than either cornea, humours, or retina (as considered by writers on optics). Sensation is performed chiefly in the brain, and these and other parts are but *transennae* to it; but also "because in Amaurosis or Gutta Serena, these parts are free from any indisposition: *i.e.,* the fibres of the optic nerve must be chiefly affected, either by obstruction by tumour, or the roots of 'em comprest about the *thalami.*" He sought to prove that the superior fibres in each thalamus have the greatest tension and the inferior the least. Unless a corresponding tension exists on the two sides double vision will result. The retina examined in a glass of clear water looks like lawn or tiffany. He refers to the vibrations in a spider's web whereby impulses are conveyed from the periphery to the centre. "Rays of light strike correspondent fibres and the percussion or vibration being towards the bottom or papilla of the eye is conveyed to the nerve." "The retina is no more transparent if so much as the oil'd paper in a lantern: being white it is better able to take the images of coloured objects than the dark shade of the choroides."

Briggs's metaphor of a spider in the midst of its web, and the fibres of the retina conveying vibrations to the papilla and so to the optic thalami is distinctly pleasing.

I think that most people will agree with Hirschberg in saying that his theory is no theory at all; but I am inclined to think that he used the Latin word *theoria* and the same word in Greek, as occurs in various parts of his thesis, to give the impression of "reflections on or thoughts concerning" vision, rather than the usual meaning of the word. The extracts I have given from this little book are sufficient for the purpose of this paper.

Briggs's second communication to the *Philosophical Transactions* is under date, 20 May, 1684. He gives an extract from a letter (undated) received from Dr. Peter Parham, of Norwich, who reported the case of a boy, aged about 20 years, in the service of a gentleman in Suffolk, "who saw acutely and strenuously by day and was just like a post when sun set. When twilight came on he was as blind as a beetle, sees nothing, runs against gates, posts, rails, (anything either higher, lower, or level to his eyes). In doors

he tumbles over stools and runs his head against doors." Briggs examined the boy by daylight and in the dark and found no abnormality in the eyes. He satisfied himself that spectacles were of no use; and was inclined to attribute the lesion to the humours. He then relates another case which he saw with Dr. Wm. Dawkins, at St. Thomas's Hospital. It was that of a young man who was taken with dizziness and pain in the head (vertex), which he imputed to the cold weather. He went at first to a quack and was given a plaister. The pain got worse; fits made their appearance, tremor in the arms and legs and then double vision. His right eye went blind which did away with the diplopia. The treatment is outlined at some length; but the man died, and Briggs bewails the fact that he did not obtain a post-mortem examination.

The third paper is merely a short note in Latin on the case of the boy who was night blind.

The *Nova Visionis Theoria* went out to the world with the blessing of Sir Isaac Newton, in a rather fulsome letter, in Latin, dated: Cambridge, 7, *Kal. Maii,* 1685.

Search in the Commissary Court of London and in the Prerogative Court of Canterbury has failed to discover Briggs's will. It is just possible that it may be at Canterbury. Nor was the warrant for his royal appointment discovered at the Public Record Office. The *Sloane MSS.* 4221, *f.* 189 gives a short account of Briggs which agrees closely with the account of him in Munk's Roll.

Sloane MSS. 1047, 7*D* gives a most interesting letter addressed to Briggs. It is as follows:—

"Lyn, Oct. ye 26th, 1681.

Worthy Sir,

I have used Cortex Peruv. much for our agues, which have been very plentifull here. I have observed in four persons my patients, that upon taking the 2nd dose (ʒ ii) they have been after 2 or 3 hours space, taken with a dimnesse, strange of sight. In a gent. aged about 46 itt took his sight away for 24 hours, and has not yett thoroughly recovered his sight, but useth spectacles to this day. In a maid servt., aged 23, itt took away her sight for three days that she could not see the way downstairs, but afterwards recovered; in a gentlewoman for severall houres, and a young gentleman the very same. I myself have been vext with an ague 14 months, and it continues still, I have taken in three quarts. of a year ʒ XIV of this cortex, itt relieved me generally for a fortnight, seldom longer, Tr. Sacra was advised by Dr. Short.

Sr. I am, yr. servt.

to Dr. Briggs. Simon Blenckerne."

Sydenham is generally credited with having introduced Peruvian bark into English therapeutics for cases of ague. I am indebted to Mr. Duke-Elder for the notes which follow:—"the active principle of quinine was isolated in 1820 by Caventon and Peketier. Beraudi (1829) seems to have been the first to report headache, tinnitus and dimness of vision following its use. The first reported case with ophthalmoscopic examination appears to be that of von Graefe, in 1857. Both Leber and Hirschberg quote this, of von Graefe, as the first case." It is of interest to note that a general practitioner at King's Lynn anticipated the observation by more than a hundred years. In the same series of letters(*Sloane MSS.* 1047) occurs one from John Wright, of Peterborough, dated 25 September, 1681. Addressed to Dr. Briggs, it gives details of two cases, but they are of no ophthalmological interest. The first deals with the case of a marasmic baby who died convulsed during teething; the second, with the case of a man, aged about 60 years, with gonorrhoea, the details of which are not fit for publication.

The portrait of Briggs shows the family coat of arms. This is emblazoned "gules, 3 bars gemelle or, a canton argent." The sinister side of the shield contains the arms of his wife, the Hobart coat.

I am indebted to the librarians of the Royal College of Surgeons and of the Royal Society of Medicine for assistance in the preparation of this paper; to Miss Blake, for the illustrations, and to Mr. Harvey Bloom for researches at the Public Record Office, the British Museum and Somerset House. I am also indebted to Mr. Arnold Sorsby for assistance with the German reference.

REFERENCES

1. **Venn.**—*Alumni Cantabrigienses*, Vol. I.
2. **Hasted.**—History of Kent, Vol. II, p. 219.
3. **Hirschberg.**—*Geschichte der Augenheilkunde*, 2nd edition. *Graefe-Saemisch Handbuch der gesamtem Augenheilkunde*, Vol. XII, Part 2.

ANNOTATION

Prevention of Blindness

The Seventeenth Annual Report of the National Society for the Prevention of Blindness in the United States for the year 1931, has been sent to us.

Financial reasons account for the Report not being so voluminous as in past years; but in spite of this, the pamphlet is an admirable one. The illustrations are excellent.

During the year in question of new admissions to schools for the blind, cases due to ophthalmia neonatorum were 7·5%. This is in

UNIV. OF MICH.

excellent contrast to the year 1907, when the percentage was as high as 28.

Emphasis is laid on the importance of pre-natal care in combating eye tragedies resulting from inherited syphilis.

An excellent poster illustration shows the danger to small children who play with scissors. Industrial eye accidents are said to be in all probability the most serious cause of blindness in the United States to-day. Sight-saving classes are on the increase, but many more are needed.

During the past year, an attempt has been made to determine what effect reading actually has on the eyes, and whether there is such a thing as a saturation point beyond which the eyes suffer, no matter how ideal the factors of lighting and good sight are. This study was undertaken in co-operation with the Department of Education of Columbia University, and important results are anticipated.

We have always held that a poster campaign is the best way of teaching the masses the important facts of eye hygiene and protection. To show that the idea of pictorial representation of eye accidents is not so recent as might be thought, we reproduce a humorous drawing of about 100 years ago showing an eye in danger.

ABSTRACTS

I.—GENERAL MEDICINE

(1) **Gasteiger, H. (Innsbruck).—Unusual ocular changes in thyroid disorders. (Ueber eine seltene Augenveränderung bei Schilddrüsenstörungen).** *Wien. Klin. Wochenschr.*, Vol. XLIV., p. 887, 1931.

(1) **Gasteiger** reports the case of a man aged 47 years, the subject of hyperthyroidism, in whom partial removal of the thyroid left unaffected some swelling of the lower lids. Within four months after the operation the condition had become much worse: the swelling of the lower lids hung like bags down to the nose. The skin was thick, and had no oedematous pitting. Definite exophthalmos developed with marked limitation of movement: there was also chemosis, and danger of keratitis owing to inability to close the lids. Associated conditions suggested that the trouble was myxoedematous in origin and so thyroid preparations were ultimately administered with striking results. Gasteiger holds that the exophthalmos was due to myxoedematous swelling of orbital

tissues, thus explaining the marked limitation of ocular movement. (The author could not find any such cases in the literature. He must have overlooked the article by L. M. Zimmermann: Exophthalmos following operation for the relief of hyperthyroidism. *Amer. Jl. of Med. Sciences*, Vol. CLXXVIII, p. 92, 1929, abstracted in this Journal, Vol. XIII, p. 580, 1929.)

ARNOLD SORSBY.

(2) **Craig, Winchell McK. and Lillie, Walter L. (Rochester, Minn.). — Chiasmal syndrome produced by chronic local arachnoiditis.** *Arch. of Ophthal.*, April, 1931.

(2) **Craig** and **Lillie** report eight cases of chronic local arachnoiditis in the region of the chiasma. Differential diagnosis of this condition may be very difficult and Cushing has enumerated seven possible causes of the chiasmal syndrome. These are (1) Meningioma with a parasellar, rather than a suprasellar, point of origin. In this there is usually no pituitary dysfunction or X-ray evidence of enlargement of the sella. (2) Pituitary adenoma which shows the usual X-ray and clinical signs of enlargement of the pituitary. (3) Craniopharyngeal pouch cysts, occurring generally in early life, and showing X-ray evidence of calcification in the cyst wall. (4) Glioma of the chiasma or third ventricle which is relatively rare and often produces anterior pouching of the sella as seen by X-rays. (5) Chronic local arachnoiditis which may simulate pituitary tumour. (6) Syphilitic meningitis which shows characteristic serological and cytological changes in the cerebro-spinal fluid. (7) Aneurysms which may present an audible bruit or show pathognomonic changes to X-rays.

The features of the chiasmal syndrome comprise (1) Lowered visual acuity. (2) Optic atrophy. (3) Bitemporal hemianopia for colours or form or both; the defect may be only scotomatous. (4) Temporal hemianopia with amaurosis of the opposite side. (5) The amaurosis may have been preceded by the following successive changes: central scotoma, caecocentral scotoma, enlargement of the scotoma leaving islets of vision, amaurosis. (6) Homonymous hemianopic scotoma for form or colours or both. (7) Asymmetry in the field defects. In the cases reported, the chiasmal region was exposed by raising a fronto-parietal osteoplastic flap, a flap of dura and then elevating the frontal lobe. Adhesions and exudate were found round the optic nerves and chiasma and sometimes loculated fluid. The adhesions were freed by a blunt hook and the fluid removed. Four cases recovered and either remained stationary or improved, the remaining four died at varying periods after operation.

The authors also describe the symptomatology of lesions involving the basal portion of the frontal lobe or the olfactory groove. No

fewer than eight different syndromes may occur. These are:—(1) Unilateral central scotoma with normal fundi. (2) Unilateral central scotoma with pallor of the disc but normal conditions in the other eye. (3) Bilateral central scotoma with pallor of both discs. (4) Bilateral papilloedema. (5) Unilateral amaurosis and optic atrophy with contralateral papilloedema. (6) Amaurosis and optic atrophy in one eye with papilloedema and central scotoma in the other eye. (7) Central scotoma and various alterations of the peripheral fields due to optic atrophy consecutive to papilloedema. (8) Bilateral amaurosis with any of the foregoing changes in the discs.

Tumours usually cause a slowly progressive evolution of signs, whereas inflammatory conditions usually have a rapid onset, are progressive for a short time and then regress noticeably.

F. A. W-N.

II.—ORBIT

Michaïl, D. (Cluj, Roumania). — Cholesteatoma of orbit. (Cholestéatomede l'Orbite.) *Arch. d'Ophtal.*, November, 1931.

Well authenticated cases of orbital cholesteatoma are so uncommon that the report of a case closely observed and examined, as in the present instance, is worthy of publication.

According to **Michaïl's** researches only four undoubted examples are on record—by Rohmer, Gosselin (reported by Demarquay), Schirmer and Birch-Hirschfeld. Gosselin's case is not accepted as genuine by some observers. In two of these cases, Schirmer's and Birch-Hirschfeld's, there was a history of traumatism. This was lacking in the other two, as also in Michaïl's. The author considers that in his case the tumour was congenital in origin.

Michaïl's patient was a boy, aged 9 years, when brought to the hospital. The parents gave a history that during the first year of the boy's life they had noticed the appearance of a painless swelling under the upper orbital margin at the temporal side.

The growth had increased in size steadily, protruding below the temporal half of the orbital rim. The eyeball was displaced downwards and towards the nasal border. The frontal bone had been eroded, leading to the formation of a notch in its margin as large as the tip of the index finger. The eye retained vision of 5/20, and showed no fundus change. Full details of a complete examination, by clinical and laboratory methods, are given and illustrated by photos and radiographs. The tumour was removed by operative measures, and the results of a thorough histological examination are forthcoming. The wall of the cyst exhibited its analogy to skin;

a thin epidermis and a layer of dermis, lacking papillae and hair follicles. Its contents seemed to have resulted from proliferation of the epidermal layer. The dermal layer contained blood vessels and numerous blood extravasations.

J. B. LAWFORD.

III.—MISCELLANEOUS

(1) **Larsson, Sven (Stockholm).—Traumatic injury of an eye followed by changes in tension in the undamaged eye: does the condition exist clinically? (Ist bei traumatischer Schädigung eines Auges am anderen Auge klinisch ein Reaktion des Intraokularen Druckes zu beobachten?)** *Acta Ophthal.*, Vol. VIII, p. 261, 1930.

(1) Experimental injury to the eye generally excites a transient rise in tension followed by hypotony. These changes also occur in the undamaged eye. **Larsson** reviews the literature on the subject of lowered tension in the undamaged eye, and reports clinical observations of 150 cases seen by him. In the great majority no lowered tension in the uninjured eye could be established; transient increase in the earlier stages was not observed at all. In many of the cases in which the tension of the uninjured eye was low, the lower limits of the normal were not overstepped. But the appendix showing details of 31 cases in which the tension did decline, reveals cases in which it was as low as 13 mm. Schiötz. This phenomenon is hardly a consensual reaction, for in some of these cases the tension in the damaged eye was raised. In one case in which the tension was decidedly low, sympathetic ophthalmitis developed; the removal of the exciting eye caused a subsidence of the inflammation and a return to the normal of the lowered tension. As similar low tensions were observed in cases of non-perforating injuries to the eye, the value of this sign as an early sign of sympathetic inflammation is doubtful. Low tension in the uninjured eye has persisted in some cases all the time they were under observation, and in some cases it remained even after the removal of the injured eye.

ARNOLD SORSBY.

(2) **Bailliart.—The eyes of hyperpietics. (L'Oeil des hypertendus).** *Bullet. de la Soc. Belge d'Ophtal.*, Vol. CXI, 1931.

(2) On November 30, 1930, **Bailliart** delivered a remarkable lecture before the Belgian Ophthalmological Society under the title of "L'Oeil des Hypertendus." Whilst paying most attention to

the measuring of the blood pressure in the central vessels of the eye, he throws new light on the vascular conditions in the glaucomatous eye and emphasises the special danger when the intravascular tension reaches or surpasses one-half of the diastolic brachial pressure.

It is surprising how well the functions of the retina are preserved with marked or even advanced degrees of arterial degeneration. It is, therefore, always important to obtain a correct history from the patients by inquiring for any abnormal subjective sensations such as black or brilliant spots before the eyes, seeing slight fog, etc. Bailliart thinks that a macular star, even by itself, is nearly always a sign of azotaemic nephritis. It is always accompanied by local hypertension of the retinal vessels. He is inclined to ascribe the dominating factor in the aetiology of renal nephritis to circulatory disturbance and believes that the oedema of the papilla, the haemorrhages and the retinal exudates are caused by it. But in nephritis, as opposed to ordinary hyperpiesis, a toxin of unknown origin is an additional factor in causing retinitis. In the case of the hyperpietic the disease has not yet attacked the kidney, or is it not the result of an affected kidney. In renal retinitis, the kidney lesion pre-exists or is contemporary with the retinitis, and—superimposed on the vascular lesions—a toxin passes into the retina. The local retinal arterial pressure loses its correlation to the general pressure; in the ordinary hyperpietic it remains 0·45 or 0·5 of the brachial diastolic, but reaches 0·7 in a nephritic. Therefore the progress in a hyperpietic will be more grave if the retinal pressure exceeds the usual proportion of the brachial diastolic, even when the usual signs of renal retinitis are not yet present. This retinal hypertension is concomitant with an elevation of intracranial pressure. Therefore the raised retinal arterial pressure, when it is present, is an important diagnostic and prognostic sign in the fine differentiation between hyperpietic and nephritic retinitis. Another cause of this relative arterial hypertension is a local vascular lesion of the central artery (increased rigidity, etc.).

Bailliart cannot decide yet whether the obliteration of the arteries causes the hypertension or *vice versa*. As far as the eye is concerned the choroidal vessels also play an important part. The signs of arteriosclerosis of the retinal vessels are caused chiefly but not exclusively by hypertension. To those signs must also be added the exudative macular retinitis recently discussed by Coppez and Danis. He shares their opinion that this is a lesion closely connected with retinitis circinata.

The writings of Bailliart are always read with pleasure and interest. His introduction of tonoscopy is probably the most important step forward since Gunn's time, and in this sphere

Bailliart reigns supreme both in theory and practice. He always shows considerable knowledge of general vascular disease, yet it is here that one dares to disagree with him. To give but two examples: Bailliart believes that macular star is nearly always associated with azotaemic nephritis and that the kidney escapes in general hyperpietic disease. He is justly proud of his method of determining the local pressure in the retinal vessels, but *sit venia verbo*—he undervalues the importance of anatomical changes. Probably the truth lies midway—in the correlation of those anatomical changes with local vascular pressure. The fact that vascular hypertension may exist without ophthalmoscopic evidence of degeneration, is in itself insufficient, because it may be a transitory symptom (viz., climax).

Perusal of Bailliart's paper itself is strongly recommended.

N. PINES.

(3) **Carter, Leland F. (Detroit). Trichinosis and its ocular manifestations.** *Jl. Amer. Med. Assoc.*, November 8, 1930.

(3) Because of its varied symptomatology trichinosis is very frequently missed in diagnosis. In 505 autopsies by Williams the undiagnosed disease was found in more than 5 per cent. of the cases.

Of the ocular signs and symptoms of trichinosis the most characteristic is chemosis of the bulbar conjunctiva. Occurring bilaterally as a rule, in the first few days of the disease there is chemosis of the bulbar conjunctiva of a pale lemon jelly appearance with only slight inflammatory reaction. The chemosis is limited to the conjunctiva overlying the external and internal recti muscles. This is due to the early invasion of the recti by the parasite. It is probable that this condition is present in 50 per cent. of the early cases. It is generally accompanied by oedema of the lids extending over the temporal and frontal regions. Pain on movement of the eye is significant. Exophthalmos, conjunctival ecchymosis, mydriasis and retinal haemorrhages are not uncommon.

The number of parasites found in the ocular muscles is much greater comparatively than that found in the skeletal muscles.

Occurring early in the disease there is invariably an eosinophilia ranging from 10 to 80 per cent.

Confirmation of the diagnosis is easily obtained if permission can be obtained for excision and pathological examination of a fragment of a rectus muscle. Otherwise the parasite must be sought for in the blood stream.

A. F. MACCALLAN.

BOOK NOTICES

Textbook of Ophthalmology. By W. S. DUKE-ELDER. Volume I. The Development, Form and Function of the Visual Apparatus. Crown Quarto, pp. xxix and 1,124, with 1,022 illustrations and 7 coloured plates. London: Henry Kimpton. 1932. Price, £3 3s.

It is quite impossible within the confines of an ordinary review, to set forth the many excellencies of this book, and no attempt will be made even to summarize its contents. Perhaps the fact that this review was due for publication last month and has not appeared until now is some indication of the character of Volume I of Duke-Elder's Text-book of Ophthalmology. It was not possible to scan the whole hastily. One started perhaps with this intention in mind but the text proved of such absorbing interest that detailed perusal was inevitable. Many instances of this might be given—there is, for example, a particularly interesting account of the chemical control of the circulation in which is described the important rôle of histamine bodies in bringing about vaso-dilatation as a result of antidromic impulses along the sensory nerves.

Encyclopaedic is the adjective which seems best fitted to give the general character of the volume under review. Whenever a subject is mentioned, it is described in full and in all its details. In the description of the movements of the eyelids for example, we are given not only the different varieties, ontogeny, and phylogeny of blinking, but also the average times occupied by the movements of the lids as obtained by analysing photographic records. (0·05 second to lower the lid, 0·15 second while it remains lowered and 0·2 second occupied in raising it.)

One has a feeling, therefore, that no limitations of space have been imposed upon the author and that he has ransacked the ophthalmic literature of the world for material on which to base his writings. One particularly important feature is the quotation of references to the literature thus employed—in fact with the possible exception of Parsons's Pathology of the Eye no such complete bibliography would ever appear to have been published in an English text-book. Another innovation is the provision of short biographies of those who have done important and authoritative work on the subjects described, the biographies being accompanied by full-page portraits. Sir William Bowman is appropriately the first of these. Apart from this, interesting little historical notes are also given; for example, we are told that when Schlemm originally found his canal it was filled with blood because he used as his

material the eye of a criminal who had been hanged. Incidentally, the author notes that although the canal was first described by Schlemm in 1831, its presence had been noted by Albinus, as far back as 1775.

The thought and care which have gone to make the text of this book of interest, are everywhere in evidence. A particularly nice analogy is given, for example, in the description of the retina wherein the bipolar cell and its processes are likened to a peripheral nerve, the ganglion cells to the cuneate and gracile nuclei and the nerve fibre layer, the optic nerve and its prolongations, to the mesial fillet in the medulla and pons. The question also of the dorsal decussation of the fourth nerve, usually a matter of no particular interest, becomes so when we are given four separate explanations of its occurrence, and phylogeny, comparative anatomy and physiology are constantly being brought in, in their appropriate places with the same effect. Physical chemistry, a subject closely associated with the name of the author is of course very adequately dealt with. More especially the original work which he did in showing that the aqueous was a dialysate is fully described. If an apology were needed for this, it might be found on page 440 where we read under the heading of "ionised diffusible substances" that "diffusible cations do not readily find their way into the eye." This might seem to some to be a statement of merely academic interest, but bismuth and mercury are diffusible cations, so its clinical importance becomes evident. Of similar importance are the remarks about how local anaesthetics increase the diffusion through the cornea of substances such as eserine, instilled into the conjunctival sac.

The subject of physical optics which must make an appeal to any ophthalmologist is excellently described, and is appropriately accompanied by portraits of Isaac Newton and Albert Einstein.

The concluding sections of this volume deal with the physiology of vision. As a general summing up of the present position with regard to colour vision it would be difficult to find a more appropriate statement than that of the author, "For more than 70 years the two streams of thought—physical and psychological—have run parallel; no one has appeared who has been able to unite them into a unitary conception." This last sentence slightly paraphrased, might be made to apply to the author's latest and greatest literary work, since its effect is to integrate to a high degree, if not entirely to unite into a unitary conception, the world's present knowledge of the development, form and function of the visual apparatus.

It goes without saying that a book of this kind should be the indispensable possession of the ophthalmologist who values a knowledge of his subject and more particularly of one whose duty

it is to instruct students. Finally, it seems almost superfluous to say that we congratulate the author on his achievement; we can only hope that its production will be as great a source of satisfaction to him as it will be of inspiration to the world of English-speaking Ophthalmologists.

Röntgen Ray Diagnosis and Treatment in Ophthalmology. (Die Röntgendiagnostik und—Therapie in der Augenheilkunde). By DR. WOLFGANG HOFFMANN. Pp. 70. 20 illustrations. Leipzig: Thieme. M.8.70.

This small book gives a very complete résumé of the present position of X-ray diagnosis and treatment in Ophthalmology. The first fifteen pages are taken up with a full account of the various methods of localizing foreign bodies in the eye. The preference is given to a method devised by Comberg. In this a contact lens with a bit of lead fastened to it is placed on the eye and the fixation object is a small light placed along the line of the X-ray beam, so that the position of the eye is definitely controlled and the position of the corneal apex accurately known.

Following this is a description of methods of demonstrating and localizing orbital conditions and the position and size of the optic foramina.

A valuable chapter is devoted to the dangers of X-rays and the damage which might be caused by them. This is followed by a full description of the methods adopted in treating many different conditions of the eyeballs and adnexa.

The book should prove very useful in indicating what can be done and what must be avoided.

Letters and Diary of Theodor Axenfeld. (Theodor Axenfeld's Briefe und Tagebuchblätter). By HELMUT AXENFELD. Enke: Stuttgart. 1931. Pp. 128 and 25 illustations. 8M.

To all the pupils and friends of the late Professor Axenfeld this book will bring memories of an essentially lovable man. In it his son has published the letters which he sent to the members of his family during his journey to Japan, together with extracts from his diary. This was the last journey Axenfeld undertook, as he died shortly after his return. To those who did not know him personally it will bring a vivid representation of the ideally happy family life which he led and will also show how devoted he was to the scientific aspects of ophthalmology.

They will realize the deep piety of the man, his honesty of purpose and his great love of humanity.

It is a book that will well repay perusal and it was an act of great filial devotion on the part of his son to publish it.

Vision and Colour Vision. By R. A. HOUSTON, M.A., D.Sc., Lecturer on Physical Optics in The University of Glasgow. Pp. 238. London: Longmans, Green & Co. Price, 15s.

This book commences with a chapter on Units—incidentally adding another to the plethora—and passes on to chapters on the discrimination of intensity, dark adaptation, acuity of vision, the visibility (*i.e.* luminosity) of the spectrum, the laws of colour mixing, the hue discrimination data, recurrent vision and flicker phenomena, fatigue and after-images, simultaneous contrast and spatial induction, theories of colour vision and colour blindness, colour vision and normal variation, a detailed examination of colour-blind subjects, and the theory of colour vision.

It is a very valuable addendum to the ordinary text books, because, in addition to describing the author's own researches on the discrimination of brightness, Ricco's law, the effect of contrast on visual acuity and colour blindness, it reviews and criticises much of the more important recent work on the subject. It is true that most of the criticism is destructive, but as the arguments are valid, this is not to be accounted to the author as a fault. Thus, for example, by the simple device of plotting $I/\Delta I$ against log I, instead of the usual $\Delta I/I$ (where I is the intensity of the light and ΔI is the least discriminable difference), Houston has found that König and Brodhun's data—the best available—accurately fit a Gaussian curve of error. This invalidates Weber's law of a constant fractional increase, which has long been suspect. None the less, Weber's law does hold good approximately over a limited range of moderate illuminations. Hecht's theoretical deductions from his excellent work on dark adaptation do not survive critical examination, whereas his statistical explanation of the effect of intensity of illumination on visual acuity receives the author's blessing. A suggestion of the present writer, founded upon the maximum of the luminosity curve (which physicists will persist in calling the "visibility" curve), that our eyes have become adapted to sunlight so as to convert as much of its energy as possible into light, was criticised by T. Smith in *Nature*, and is now finally asphyxiated by the equation

$$\frac{d}{d\,(\log \lambda)} \frac{I}{\lambda^4} e^{-c_2/\lambda T} = 0$$

which gives the maximum as 725$\mu\mu$—which is absurd!

Houston's work on colour blindness is valuable in laying stress on the statistical distribution, which has hitherto been neglected. Both the methods and the deductions appear to the writer to be open to criticism, which cannot be adequately set forth in a review.

The book can be strongly recommended to all who are interested in these problems, but will prove rather strong meat for those who have not learnt to think in logarithms and graphs.

Handbuch der biologischen Arbeitsmethoden. *Edited by* GEH. MED-RET PROF. DR. EMIL ABDERHALDEN. Abt. V, Theil 6, Heft. 8. Price, R.M. 6.50.

Lieferung 374 of this colossal work deals with the methods of investigation of the cornea, by F. P. Fischer, of Leipzig, and the methods of measuring sensation-time (*Empfindungszeit*) by M. Monjé, of Rostock.

In the first part Gullstrand's, Dekking's, and Ansler's methods of photographing the corneal reflexes and Berg's allied ophthalmometer are described. This is followed by some excellent photographs of the corneal reflexes by Fischer.

In the second part Fröhlich's and Monjé's methods of measuring the absolute value of the "Empfindungszeit" are described, and this is followed by Pulfrich's method of measuring the differences in the "Empfindungszeit's" and its modifications by Wölfflin and Engelkin and Pors, and by Fröhlich. A section is devoted to the extinction methods of Helmholtz-Exner, Piéron, and Monjé.

The measurements of "Empfindungszeit"—which has a technical meaning inadequately represented by "sensation-time"—will appeal chiefly to research workers in physiological optics. The articles on the cornea will appeal more strongly to ophthalmologists.

Government Ophthalmic Hospital, Madras. Annual Report, 1931. Madras: Government Press. Price, 1 rupee, 6 annas.

The modern history of the Madras Government Ophthalmic Hospital began under the superintendency of Elliot in 1904 when the hospital was greatly enlarged and vast improvements were made in organisation. Elliot was succeeded by Kirkpatrick in 1914, who in turn gave place to R. E. Wright, the author of this report, in 1917. Wright has recently retired from the service of the Government of India.

The author obviously has been greatly interested in his clinical and operative work. In his description thereof, no doubt to secure emphasis, he has not hesitated to use modes of expression and metaphors which are rarely found in Government reports.

More than 1,800 cataract extractions were performed during the year by the author and his assistants. The results were very good for oriental patients.

Secondary glaucoma due to intumescent cataract seems to be a common clinical entity; this is a condition which is rarely seen in London.

In previous issues of this journal, Wright has described in detail that condition of the cornea known as superficial punctate keratitis, or as he prefers to call it *keratitis diversiformis et uveitis anterior*,

(*Brit. Jl. of Ophthal.*, June and November, 1930) a common condition in tropical and sub-tropical countries. Nearly 3,000 such cases were seen and healed during the year under review. The author was unfortunate enough to suffer himself from this disease, which left him with slightly less astigmatism than before.

There is no doubt that the very fullest use was made of the in-patient accommodation at the Hospital, for with a total of 170 available beds the average number of in-patients accommodated daily was 231.

CORRESPONDENCE

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

SIRS,—The publication of the note on a "Device for Preventing Glare in Electric Ophthalmoscopes" (*Brit. Jl. of Ophthal.*, April, 1932, p. 225) has led to the discovery of the originator of the device. I have just heard that Mr. Thomson Henderson, of Nottingham, had it made for him some 20 years ago. It is such a delightfully simple and effective device that credit should go where it is due. I pay my tribute to Mr. Thomson Henderson's ingenuity.

I have found that the pattern shown at the Ophthalmological Section of the Royal Society of Medicine can be improved. The tube is now reduced to a curved ledge, fitted to the lower edge of the hole in the mirror, somewhat the shape of the tip of a mapping pen. The protection is just as full, but the field is appreciably widened. The alteration has been made for me by Messrs. Rayner.

Yours faithfully,

N. BISHOP HARMAN.

NOTES

Death

THE death is announced of Hermann Pagenstecher, of Wiesbaden, at an advanced age. He was the author, with Genth, of a pathological atlas of the eye.

* * * *

British Medical Association. Centenary Meeting

THE provisional programme for the centenary meeting of the British Medical Association has been published. The following are the officers of the ophthalmic section. *President*: Sir John Parsons, F.R.S.; *Vice-Presidents*: W. Gordon M. Byers, J. Jameson Evans, N. Bishop Harman, Sir William Lister, K.C.M.G., R. Foster Moore,

F. H. Napier, D. D. Paton, C. H. Usher, and Cyril H. Walker. *Hon. Secretaries*: W. S. Duke-Elder and J. W. Tudor Thomas.

The following arrangements are announced.

Wednesday, July 27.—Discussion. "The Ocular Manifestations of Lesions of the Fifth Nerve," to be opened by R. Foster Moore and Dr. C. M. Hinds Howell. The following have arranged to participate: Hugh Cairns, Sir William Lister, W. S. Duke-Elder, Dr. Hugh Carleton, J. H. Doggart, A. J. Ballantyne and Charles Rudd.

Thursday, July 28.—Papers. "The Circulation of the Ciliary Fluid," by Dr. Richard Kerry. "The Diagnosis and Treatment of Tuberculous Disease of the Eye," by Dr. Camac Wilkinson. "Temporary Changes in the Refraction of the Eye in Diabetes," by R. A. Greeves. "A Preliminary Note on Aspiration of the Vitreous," by F. A. Juler. "Ophthalmology in General Practice," by D. V. Giri. "Some effects of Glare upon the Eye," by Squadron-Leader P. C. Livingston, R. A. F., M.S.

* * * *

Amalgamation

THE Editor of the *Revista Cubana de Oftalmologia y Oto-rino-Laringologia* informs us that this journal is being amalgamated with the *Revista Cubana de Oto-Neuro-Oftalmiatria*.

* * * *

Corrigendum

OUR attention has been called to a mistake on page 240 of our April No. In line 20, the curved needle should have been entered as "3·5 mm. wide and 4·5 cm. long."

* * * *

Second Ophthalmological Re-union in Latin America

THE first re-union was held in February, 1931, at Santiago, Chili. It is proposed to hold the second at Buenos Aires in September, 1932. Preliminary arrangements, in the hands of Dr. Argañaraz, Dr. Charlin and Natale, have resulted in the formation of a general scheme. The Honorary Presidents have been nominated as follows: Prof. De Maria, Prof. Argañaraz, Dr. Wernicke, Prof. Fialho, Prof. Charlin, Dr. Barnère. A strong executive committee is already at work.

* * * *

XIV International Ophthalmological Congress, Madrid, 1933.

WE have received the following note from the Secretary of the International Council of Ophthalmology, Dr. E. Marx. "Modifying the arrangements, issued a few months ago in the ophthalmological journals, we beg to draw the attention of speakers, desiring to make

a communication to the next congress, to the following modification as to expedition of the short extracts of papers to be read. These short extracts should not be in the hands of the secretary of the International Ophthalmological Council on December 1, 1932, as was previously stipulated, but should be addressed *before November* 1, 1932, to the secretary of the national committee at Madrid. The secretary of this Spanish committee is Dr. F. F. Poyales, M.D., Olozága 3, Madrid."

* * * *

Appointments

T. HARRISON BUTLER, M.D., Oxon, has been elected Honorary Ophthalmic Surgeon to the West Bromwich and District Hospital.

M. DYKES BOWER has been elected Assistant Surgeon to the West of England Eye Infirmary, Exeter.

FUTURE ARRANGEMENTS

1932

June 7.—Midland Ophthalmological Society, at Gloucester Royal Infirmary.

June 10.—Section of Ophthalmology, Royal Society of Medicine. (Annual Meeting).

July 27-28.—British Medical Association (Centenary Meeting), Section of Ophthalmology, in London.

October 4.—Midland Ophthalmological Society, at Birmingham Eye Hospital.

CONTEMPORARY OPHTHALMIC LITERATURE

American Journal of Ophthalmology. *April, 1932.*

THYGESON. Experimental granular conjunctivitis in monkeys induced by bacterium granulosis.

SWAB. Albinism in the progeny of negro and white parents.

WEYMANN. Diffuse papilloma of the limbus.

JACOBS. The Brown duochrome refraction test.

MARLOW. The technique of the prolonged occlusion test.

FERRER. Tonometry before and after cataract operation.

KOLODNY. Pulsating exophthalmos.

WALKER. Analogies and differences of the second and eighth nerves and end-organs. Generalising preliminary considerations. II. Anatomical.

Archives of Ophthalmology. *April, 1932.*

MAYER. Detachment of the retina and its surgical therapy. An experimental study.
ATKINSON. Angiomatosis retinae with cerebellar cyst (Lindau's disease).
PASCAL. Fundamentals of dynamic retinoscopy.
ALEXANDER. The pathology of melanosis and of benign melanomas of the ciliary body.
FRIEDENWALD and PIERCE. The circulation of the aqueous. 1. Rate of flow.
FERREE and RAND. The problem of late afternoon lighting.
AMES, GLIDDON and OGLE. Size and shape of ocular images. 1. Method of determination and physiologic significance.
KRAUSE. The chemical constitution of the sclera.

Annales d'Oculistique. *March, 1932.*

MORAX, NIDA and MARTERET. Granuloma of the conjunctiva with suppurating adenitis.
MORAX and BOLLACK. Granuloma of the conjunctiva with adenopathy.
LAGRANGE. Annular interstitial infiltration of the cornea in malignant lympho-granulomatosis.
MORAX. Corneal lesions in the course of malignant lympho-granulomatosis.
RIFAT. Two cases of palpebral granuloma.
BARRIÈRE. Surgical correction of motor disorders of the obliques.
Professor OTTO HAAB, 1850-1931.
Professor S. S. GOLOVINE.

Archives d'Ophtalmologie. *March, 1932.*

VILLARET, JUSTIN-BESANÇON, SCHIFF-WERTHEIMER and GALLOIS. Choline esters in ophthalmology.
DEDIMOS. Ocular manifestations of paludism.
VALERIO. Two cases of paralysis of the third nerve after prophylactic injection of anti-tetanic serum.
D'UBY. Myopic detachment of the retina cured by the method of Sourdille.

April, 1932.

WORMS. Decompressive trephining of the optic canal.
BESSIÈRE. Does diabetic retinitis exist in the absence of renal changes?
DEDIMOS. Ocular manifestations of paludism.

Klinische Monatsblätter für Augenheilkunde. *April, 1932.*

ELSCHNIG and NONNENBRUCH. Polycythaemia and embolus of the central artery of the retina.
DEUTSCHMANN. On the problem of genuine detachment of the retina.
HOFFMANN. The use of the mercury vapour point light in irradiation of the eye.
HERZAU and HOSSMANN. On interstitial keratitis.
KIKAI. On the inflammatory reaction to X- and ultra-violet rays on the uncovered eye in irradiation at a distance.
MEYER. On the yellow-blue sensitivity of protanopes and deuteranopes in comparison with that of trichromats.
HUBER. On the genesis of albuminuric retinitis.
DUYNSTEE. *Degeneratio maculae luteae disciformis.*
FEILCHENFELD On voluntary eye movements, particularly rolling of the eyes.
BARTHA. A case of congenital entropion.
FALTA. The early diagnosis of trachoma. (The tarsal muscle symptom.)

Zeitschrift für Augenheilkunde. *April, 1932.*

MELLER. On cultivation of tubercle bacilli from the ocular tissues in uveitis
URBANEK and MELLER. Isolation of tubercle bacilli from the blood of ophthalmic patients.
MYLIUS. Clinical and anatomico-pathological investigations of the changes in eclampsia.
DANIELS. On homonymous hemianopia in migraine.
PRESBURGER. The dissemination of sarcoma of the eye.

Archivio di Ottalmologia. *April, 1932.*

FERRARI. Primary glaucoma and average tension.

Bollettino d'Oculistica. *March, 1932.*

RONCHI. On the visual acuity.
VENCO. The retinal circulation in connection with the various states of intracranial tension.
LUMBROSO. Reports on sedimentation of the blood and ocular disease.
FOCOSI. Percaine in ophthalmology.
MOTOLESE. Direct injury of the optic nerve with laceration of the internal rectus and blindness: medico-legal question.

Lettura Oftalmologica. *March, 1932.*

BAQUIS. On the extraction of metallic intra-ocular foreign bodies with a giant magnet.
CASTELLI. Considerations on the examination of retinal tumours.

Archivos do Instituto Penido Burnier. *March, 1932.*

VAMPRÉ. Post-operative neuralgia (physio-pathology of the Gasserian ganglion).
BURNIER. On trachoma in Brazil. Its origin and diffusion.
ARIANI. Tuberculous sclero-keratitis.
NEVES. Examination and dental treatment in the light of ophthalmology.
DE BARROS and CHAVES. Intolerance of lumbar puncture and its pathogenesis.

Revista Oto-Neuro-Oftalmologica y de Cirugia Neurologica. *May, 1932.*

WILLIAMS. Rhinogenous orbito-ocular affections.
CUSTODIS. On inflammations of the orbit in osteomyelitis of the superior maxilla.
PAVIA. A new case of Parinaud's disease.

Revista Oto-Neuro-Oftalmologica. *April, 1932.*

BENJAMIN. A cure of thrombosis of the cavernous sinus.
RISER, MERIEL and PLANQUES. Vascular spasms in neurology.
PAVIA and ARANA. Serous Tenonitis of endocrine origin.

Boletin de Informacion Oftalmologica. *January-February, 1932.*

DAMEL. The vitreous body. Embryology, anatomy, physiology and bibliography.
COURTIS. Pathological anatomy of the vitreous body.
——— Treatment of diseases of the vitreous.